

DAFTAR PUSTAKA

- Abadi, M.M., Tang, H., Rashidi, M.M., 2024. A review of simulation and numerical modeling of electric arc furnace (EAF) and its processes. *Heliyon* 10, e32157. <https://doi.org/10.1016/j.heliyon.2024.e32157>
- Ahmetoğlu, S., Tanik, A., 2020. Management of Carbon Footprint and Determination of GHG Emission Sources in Construction Sector. *International Journal of Environment and Geoinformatics* 7, 191–204. <https://doi.org/10.30897/ijgeo.726913>
- Al Sholi, H.Y., Wakjira, T., Kutty, A.A., Habib, S., Alfadhli, M., Aejas, B., Kucukvar, M., Onat, N.C., Kim, D., 2023. How circular economy can reduce scope 3 carbon footprints: Lessons learned from FIFA world cup Qatar 2022. *Circular Economy* 2, 100026. <https://doi.org/10.1016/j.ccc.2023.100026>
- Alamri, A.D.B.B., Alamri, K.A.Q., Alfaqih, A.S.B.A., Alnuayri, W.A.A., Alamri, S.K.D., Alghamdi, A.J.S., Alnuayri, M.A.H., Aljadi, A.K.A., Alorabi, F.M.A.A., Alfaqih, M.A., 2024. The Influence of Climate Change on Vector-Borne Disease Transmission and Spread: A Case Study of Dengue and Malaria. *Journal of Ecohumanism* 3. <https://doi.org/10.62754/joe.v3i8.6200>
- Aldersoni, A. abdulmohsen, Ibrahim, A.O., Aldamady, A.A.H., Bashir, F.M., Babatunde, O.E., Dodo, Y.A., Ibrahim, W., 2025. Investigating the impact of low-carbon building materials on energy consumption and carbon emissions in construction projects. *International Journal of Low-Carbon Technologies* 20, 1581–1592. <https://doi.org/10.1093/ijlct/ctaf096>
- Alrbai, M., AlAsfar, J., Alahmer, A., Saeed, M., 2026. Life-cycle assessment and techno-economic analysis of a grid-connected solar photovoltaic system: Environmental benefits and economic feasibility. *Energy Exploration & Exploitation*. <https://doi.org/10.1177/01445987261417705>
- Arogundade, S., Dulaimi, M., Ajayi, S., 2023. Holistic Review of Construction Process Carbon-Reduction Measures: A Systematic Literature Review Approach. *Buildings* 13, 1780. <https://doi.org/10.3390/buildings13071780>
- Arsyah, R.P., Yuwono, B.E., 2023. Identifikasi jejak karbon pada pekerjaan tiang pancang (Studi kasus: Proyek konstruksi Indoor Multifunction Stadium GBK). *Jurnal*

- BAPPENAS, 2025. Strategi Dan Penahapan Pembangunan Rendah Karbon Dalam RPJPN 2025-2045 - Upaya Mencapai Net Zero Emissions. BAPPENAS, Jakarta.
- Bertolini, M., Dutillo, P., Lisi, F., 2025. Accounting carbon emissions from electricity generation: A review and comparison of emission factor-based methods. *Appl. Energy* 392, 125992. <https://doi.org/10.1016/j.apenergy.2025.125992>
- Brander, M., Bjørn, A., 2023. Principles for accurate GHG inventories and options for market-based accounting. *Int. J. Life Cycle Assess.* 28, 1248–1260. <https://doi.org/10.1007/s11367-023-02203-8>
- Camarasa, C., Mata, É., Navarro, J.P.J., Reyna, J., Bezerra, P., Angelkorte, G.B., Feng, W., Filippidou, F., Forthuber, S., Harris, C., Sandberg, N.H., Ignatiadou, S., Kranzl, L., Langevin, J., Liu, X., Müller, A., Soria, R., Villamar, D., Dias, G.P., Wanemark, J., Yaramenka, K., 2022. A global comparison of building decarbonization scenarios by 2050 towards 1.5–2 °C targets. *Nat. Commun.* 13. <https://doi.org/10.1038/s41467-022-29890-5>
- Cao, R., Hao, Y., Li, Y., Liao, W., 2025. Emerging trends in lifecycle assessment of building construction for greenhouse gas control: implications for capacity building. *Discover Applied Sciences*. <https://doi.org/10.1007/s42452-025-06853-1>
- Carbon Dioxide Daily, 2026. Carbon Dioxide Daily. CO2-Earth. URL <https://www.co2.earth/annual-co2> (diakses 1.17.26).
- Celik, K., Meral, C., Petek Gursel, A., Mehta, P.K., Horvath, A., Monteiro, P.J.M., 2015. Mechanical properties, durability, and life-cycle assessment of self-consolidating concrete mixtures made with blended portland cements containing fly ash and limestone powder. *Cem. Concr. Compos.* 56, 59–72. <https://doi.org/10.1016/j.cemconcomp.2014.11.003>
- Chan, E.H.W., Qian, Q.K., Lam, P.T.I., 2009. The market for green building in developed Asian cities—the perspectives of building designers. *Energy Policy* 37, 3061–3070. <https://doi.org/10.1016/j.enpol.2009.03.057>

- Chen, L., Huang, L., Hua, J., Chen, Z., Wei, L., Osman, A.I., Fawzy, S., Rooney, D.W., Dong, L., Yap, P.-S., 2023. Green construction for low-carbon cities: a review. *Environ. Chem. Lett.* 21, 1627–1657. <https://doi.org/10.1007/s10311-022-01544-4>
- Chen, L., Msigwa, G., Yang, M., Osman, A.I., Fawzy, S., Rooney, D.W., Yap, P.-S., 2022. Strategies to achieve a carbon neutral society: a review. *Environ. Chem. Lett.* 20, 2277–2310. <https://doi.org/10.1007/s10311-022-01435-8>
- Cheng, D., Reiner, D.M., Yang, F., Cui, C., Meng, J., Shan, Y., Liu, Y., Tao, S., Guan, D., 2023. Projecting future carbon emissions from cement production in developing countries. *Nat. Commun.* 14, 8213. <https://doi.org/10.1038/s41467-023-43660-x>
- Christy, A., Elnahass, M., Amezaga, J., Browne, A., Heidrich, O., 2024. A dynamic framework to align company climate reporting and action with global climate targets. *Bus. Strategy Environ.* 33, 3103–3128. <https://doi.org/10.1002/bse.3635>
- CIDB Malaysia, 2021. EMBODIED CARBON INVENTORY DATA FOR CONSTRUCTION MATERIALS . Construction Industry Development Board Malaysia, Malaysia.
- Correddu, F., Lunesu, M.F., Sechi, S., Caratzu, M.F., Pulina, G., 2025. CO2 removal to reach net zero warming of global methane and nitrous oxide emissions of livestock: Comparison of two metrics under different 2050 FAO scenarios. *PLoS One* 20, e0330379. <https://doi.org/10.1371/journal.pone.0330379>
- Crippa, M., Guizzardi, D., Pagani, F., Banja, M., Muntean, M., Schaaf, E., Quadrelli, R., Risquez Martin, A., Taghavi-Moharamli, P., Köykkä, J., Grassi, G., Rossi, S., Brandao De Melo, J., Oom, D., Branco, A., Suárez-Moreno, Sedano, F., San-Miguel, J., Manca, G., Pisoni, E., Pekar, F., 2025. GHG emissions of all world countries - 2025 Report. Luxembourg. <https://doi.org/https://data.europa.eu/doi/10.2760/9816914>
- Drewniok, M.P., Dunant, C.F., Allwood, J.M., Ibell, T., Hawkins, W., 2023. Modelling the embodied carbon cost of UK domestic building construction: Today to 2050. *Ecological Economics* 205, 107725. <https://doi.org/10.1016/j.ecolecon.2022.107725>

Emission Index, 2024. Greenhouse Gas Emissions in Indonesia. Emission Index. URL https://www.emission-index.com/countries/indonesia?utm_source=chatgpt.com (diakses 1.18.26).

ENCORD, 2012. Construction CO₂ e Measurement Protocol: A Guide to reporting against the Green House Gas Protocol for construction companies. ENCORD, Utrecht.

Fistcar, W.A., 2020. Implementasi Life Cycle Assessment (LCA) Pada Pemilihan Perkerasan Kaku dan Lentur Kontruksi Jalan Tol Balikpapan-Samarinda. Jurnal Aplikasi Teknik Sipil 18, 307–314.

Gentil, E., Christensen, T.H., Aoustin, E., 2009. Greenhouse gas accounting and waste management. Waste Management & Research: The Journal for a Sustainable Circular Economy 27, 696–706. <https://doi.org/10.1177/0734242X09346702>

Gillenwater, M., 2022. Examining the impact of GHG accounting principles. Carbon Manag. 13, 550–553. <https://doi.org/10.1080/17583004.2022.2135238>

Global Construction Perspectives, Oxford Economics, 2015. Global Construction 2030: A global forecast for the construction industry to 2030. London.

Gurney, K.R., Dass, P., Kato, A., Mitra, B., Nematchoua, M.K., 2024. Scope 2 estimates of carbon dioxide emissions from electricity consumption at the US census block group scale. Sci. Data 11, 1344. <https://doi.org/10.1038/s41597-024-04180-5>

Hatmoko, J.U.D., Hidayat, A., Setiawati, A., Prasetyo, S.C.A., 2018. Measuring Carbon Footprint of Flexible Pavement Construction Project in Indonesia. E3S Web of Conferences 31, 07001. <https://doi.org/10.1051/e3sconf/20183107001>

Hatmoko, J.U.D., Wibowo, A.M., Prasetyo, F., 2023. Carbon Emissions Analysis of Modular House Construction. E3S Web of Conferences 448, 03040. <https://doi.org/10.1051/e3sconf/202344803040>

Herlina, L., Rani, D.S., Susantoro, T.M., Agustini, Haris, A., Yenti, E., Adriany, R., Herizal, Morina, Hidayati, N., Wijayako, R.S., Atmoko, A.D., Rahmadi, A., Istiyanie, D., Nardey, S., Ardhyarini, N., 2025. Indonesia's country-specific CO₂ emission factor based on gas fuels for greenhouse gas inventory in the energy sector. Environmental Pollution 368, 125749. <https://doi.org/10.1016/j.envpol.2025.125749>

- Hou, H., Feng, X., Zhang, Y., Bai, H., Ji, Y., Xu, H., 2021. Energy-related carbon emissions mitigation potential for the construction sector in China. *Environ. Impact Assess. Rev.* 89, 106599. <https://doi.org/10.1016/j.eiar.2021.106599>
- Huang, Y., Wang, Z., Zhang, F., Tan, J., Hu, X., 2025. Key factors influencing CO2 emissions in the southern power grid of China. *Front. Environ. Sci.* 13. <https://doi.org/10.3389/fenvs.2025.1603809>
- Huang, Z., Zhou, H., Miao, Z., Tang, H., Lin, B., Zhuang, W., 2024. Life-Cycle Carbon Emissions (LCCE) of Buildings: Implications, Calculations, and Reductions. *Engineering* 35, 115–139. <https://doi.org/10.1016/j.eng.2023.08.019>
- IEA, 2024. Life cycle Upstream Emission Factors 2024 Database documentation. IEA Publications, France.
- INP, 2024. Indonesia Aims for 1.91 Million Ton Emission Reduction in Building Sector by 2030. indonesia national police. URL <https://inp.polri.go.id/artikel/indonesia-aims-for-191-million-ton-emission-reduction-in-building-sector-by-2030> (diakses 1.16.26).
- IPCC, 2023. The Earth's Energy Budget, Climate Feedbacks and Climate Sensitivity, dalam: *Climate Change 2021 – The Physical Science Basis*. Cambridge University Press, hlm. 923–1054. <https://doi.org/10.1017/9781009157896.009>
- IPCC, 2022a. Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change Mitigation of Climate Change. IPCC, Cambridge.
- IPCC, 2022b. *Climate Change 2022 : Mitigation of Climate Change*. Working Group III Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, United Kingdom and New York. <https://doi.org/10.1017/9781009157926>
- IPCC, 2021a. Annex VII: Glossary, dalam: *Climate Change 2021 – The Physical Science Basis*. Cambridge University Press, United Kingdom and New York, hlm. 2215–2256. <https://doi.org/10.1017/9781009157896.022>
- IPCC, 2021b. *Climate Change 2021: The Physical Science Basis*. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate

<https://doi.org/10.1017/9781009157896>

- Jafary Nasab, T., Monavari, S.M., Jozi, S.A., Majedi, H., 2020. Assessment of carbon footprint in the construction phase of high-rise constructions in Tehran. *International Journal of Environmental Science and Technology* 17, 3153–3164. <https://doi.org/10.1007/s13762-019-02557-3>
- Jiang, P., Keith Tovey, N., 2009. Opportunities for low carbon sustainability in large commercial buildings in China. *Energy Policy* 37, 4949–4958. <https://doi.org/10.1016/j.enpol.2009.06.059>
- Joseph, V.R., Mustaffa, N.K., 2023. Carbon emissions management in construction operations: a systematic review. *Engineering, Construction and Architectural Management* 30, 1271–1299. <https://doi.org/10.1108/ECAM-04-2021-0318>
- Joy, A.E., Alex, O.E., 2015. carbon emission management in the construction industry – case studies of Nigerian construction industry. *American journal of Engineering Research* 4, 112–122.
- Kanafani, K., Magnes, J., Lindhard, S.M., Balouktsi, M., 2023. Carbon Emissions during the Building Construction Phase: A Comprehensive Case Study of Construction Sites in Denmark. *Sustainability (Switzerland)* 15. <https://doi.org/10.3390/su151410992>
- Kanna. I, V., Roseline, S., Balamurugan, K., Jeeva, S., Augastin Santhiyagu, I., 2024. The Effects of Greenhouse Gas Emissions on Global Warming, dalam: *Encyclopedia of Renewable Energy, Sustainability and the Environment*. Elsevier, hlm. 143–154. <https://doi.org/10.1016/B978-0-323-93940-9.00216-4>
- Karakosta, C., Papathanasiou, J., 2025. Decarbonizing the Construction Sector: Strategies and Pathways for Greenhouse Gas Emissions Reduction. *Energies (Basel)*. 18. <https://doi.org/10.3390/en18051285>
- Karalis, D., Kanakoudis, V., 2023. Carbon footprint of products and services: The case of a winery in Greece. *Science of The Total Environment* 878, 162317. <https://doi.org/10.1016/j.scitotenv.2023.162317>

- Kim, K.T., Kim, I., 2021. The significance of scope 3 ghg emissions in construction projects in korea: Using EIA and LCA. *Climate* 9, 1–13. <https://doi.org/10.3390/cli9020033>
- Kisku, N., Joshi, H., Ansari, M., Panda, S.K., Nayak, S., Dutta, S.C., 2017. A critical review and assessment for usage of recycled aggregate as sustainable construction material. *Constr. Build. Mater.* 131, 721–740. <https://doi.org/10.1016/j.conbuildmat.2016.11.029>
- Klaaßen, L., Stoll, C., 2021. Harmonizing corporate carbon footprints. *Nat. Commun.* 12, 6149. <https://doi.org/10.1038/s41467-021-26349-x>
- KLHK, 2022. Enhanced Nationally Determined Contribution Republic of Indonesia. UNFCCC .
- Labaran, Y.H., Mathur, V.S., Muhammad, S.U., Musa, A.A., 2022. Carbon footprint management: A review of construction industry. *Clean. Eng. Technol.* 9, 100531. <https://doi.org/10.1016/j.clet.2022.100531>
- Lai, K.E., Abdul Rahiman, N., Othman, N., Ali, K.N., Lim, Y.W., Moayed, F., Mat Dzahir, M.A., 2023. Quantification process of carbon emissions in the construction industry. *Energy Build.* 289, 113025. <https://doi.org/10.1016/j.enbuild.2023.113025>
- Leão, E.B. de S., Nascimento, L.F.M. do, Andrade, J.C.S. de, Oliveira, J.A.P. de, 2020. Carbon accounting approaches and reporting gaps in urban emissions: An analysis of the Greenhouse Gas inventories and climate action plans in Brazilian cities. *J. Clean. Prod.* 245, 118930. <https://doi.org/10.1016/j.jclepro.2019.118930>
- Lendra, L., Gawei, A.B.P., Sintani, L., 2022. Analisis Konsumsi Energi Dan Emisi Gas Rumah Kaca Pada Pekerjaan Konstruksi Jalan Dengan Perkerasan Lentur Dan Perkerasan Kaku. *Jurnal Reka Lingkungan* 10, 201–211. <https://doi.org/10.26760/rekalingkungan.v10i2.165-176>
- Li, C., Pradhan, P., Chen, G., Kropp, J.P., Schellnhuber, H.J., 2025. Carbon footprint of the construction sector is projected to double by 2050 globally. *Commun. Earth Environ.* 6, 831. <https://doi.org/10.1038/s43247-025-02840-x>
- Li, J., Zhang, Q., Etienne, X.L., 2024. Optimal carbon emission reduction path of the building sector: Evidence from China. *Science of The Total Environment* 919, 170553. <https://doi.org/10.1016/j.scitotenv.2024.170553>

- Li, L., Gao, L., Zhang, X., Xu, H., Jiang, L., 2025. Research on Building's Carbon Emission Calculation and Reduction Strategy Based on Life Cycle Assessment (LCA) and Building in Formation Modeling (BIM): A Case Study in Beijing, China. *Buildings* 15. <https://doi.org/10.3390/buildings15091403>
- Liu, T., Wu, Z., Chen, C., Chen, H., Zhou, H., 2024. Carbon Emission Accounting during the Construction of Typical 500 kV Power Transmissions and Substations Using the Carbon Emission Factor Approach. *Buildings* 14, 145. <https://doi.org/10.3390/buildings14010145>
- Lu, K., Jiang, X., Tam, V.W.Y., Li, M., Wang, H., Xia, B., Chen, Q., 2019. Development of a carbon emissions analysis framework using building information modeling and life cycle assessment for the construction of hospital projects. *Sustainability (Switzerland)* 11. <https://doi.org/10.3390/su11226274>
- Mora, C., Spirandelli, D., Franklin, E.C., Lynham, J., Kantar, M.B., Miles, W., Smith, C.Z., Freel, K., Moy, J., Louis, L. V., Barba, E.W., Bettinger, K., Frazier, A.G., Colburn IX, J.F., Hanasaki, N., Hawkins, E., Hirabayashi, Y., Knorr, W., Little, C.M., Emanuel, K., Sheffield, J., Patz, J.A., Hunter, C.L., 2018. Broad threat to humanity from cumulative climate hazards intensified by greenhouse gas emissions. *Nat. Clim. Chang.* 8, 1062–1071. <https://doi.org/10.1038/s41558-018-0315-6>
- Neelamani, S., 2022. Coastal Disasters and Mitigation Measures. *hlm.* 93–100. https://doi.org/10.1007/978-981-16-5312-4_7
- Nocentini, E., Marchi, M., Caro, D., Tropea, F., Patrizi, N., Pulselli, F.M., 2026. Calculation of life cycle-based emission factors for administrative services: A replicable framework for climate action in the public sector. *Environ. Impact Assess. Rev.* 118, 108294. <https://doi.org/10.1016/j.eiar.2025.108294>
- Onat, N.C., Kucukvar, M., Tatari, O., 2014. Scope-based carbon footprint analysis of U.S. residential and commercial buildings: An input–output hybrid life cycle assessment approach. *Build. Environ.* 72, 53–62. <https://doi.org/10.1016/j.buildenv.2013.10.009>
- Onat, N.C., Mandouri, J., Kucukvar, M., Kutty, A.A., Al-Muftah, A.A., 2025. Driving Sustainable Business Practices With Carbon Accounting and Reporting: A Holistic Framework and Empirical Analysis. *Corp. Soc. Responsib. Environ. Manag.* 32, 2795–2814. <https://doi.org/10.1002/csr.3096>

- Pauliuk, S., Carrer, F., Heeren, N., Hertwich, E.G., 2024. Scenario analysis of supply- and demand-side solutions for circular economy and climate change mitigation in the global building sector. *J. Ind. Ecol.* 28, 1699–1715. <https://doi.org/10.1111/jiec.13557>
- Pérez-Rangel, N. V., Ancheyta, J., de Souza, T.A.Z., da Costa, R.B.R., Sousa, D.J., Cardinali, V.B.A., Frez, G. V., Vidigal, L.P. V., Pinto, G.M., Roque, L.F.A., Mattos, A.P., Coronado, C.J.R., Hernández, J.J., 2025. HVO Adoption in Brazil: Challenges and Environmental Implications. *Sustainability* 17, 6128. <https://doi.org/10.3390/su17136128>
- Prakarsa, W.U., Dewi, K., 2024. The Effect of Plant Characteristics on CO2 Emission Factor Development: A Case Study of Coal-Fired Power Plants in Indonesia. *Journal of Community Based Environmental Engineering and Management* 9, 1–10. <https://doi.org/10.23969/jcbeem.v9i1.18935>
- Putri, K.N.R., Tjandrawira, M.I., Handayani, T.N., 2021. Greenhouse Gases (GHG) Emissions during the Construction Stage of a Precast Building in Indonesia. *IOP Conf. Ser. Earth Environ. Sci.* 933, 012007. <https://doi.org/10.1088/1755-1315/933/1/012007>
- R, T., Varadha, V.P.B., B, D., V, Dr.K., T, T., 2020. Carbon Pay Back Period Analysis of On Grid and Off Grid Solar PV System. *Journal of Advanced Research in Dynamical and Control Systems* 12, 139–149. <https://doi.org/10.5373/JARDCS/V12SP5/20201742>
- Rabaey, K., Ragauskas, A.J., 2014. Editorial overview: Energy Biotechnology. *Curr. Opin. Biotechnol.* 27, v–vi. <https://doi.org/10.1016/j.copbio.2014.04.001>
- Ragazzi, I., Farley, M., Jeffery, K., Butnar, I., 2023. Using life cycle assessments to guide reduction in the carbon footprint of single-use lab consumables. *PLOS Sustainability and Transformation* 2, e0000080. <https://doi.org/10.1371/journal.pstr.0000080>
- Reeves, A.M.M., Starr, J., 2025. Household Income Versus Carbon Footprint, dalam: *Vocabulary for Sustainable Consumption and Lifestyles: A Language for Our Common Future*. Taylor and Francis, hlm. 25–29. <https://doi.org/10.4324/9781003584056-4>
- Riffat SB, M.A., 2015. Building Energy Consumption and Carbon dioxide Emissions: Threat to Climate Change. *J. Earth Sci. Clim. Change* s3. <https://doi.org/10.4172/2157-7617.S3-001>

- Rijken, I.D., Idawati, L., Simanjuntak, R.A., 2020. Pengukuran Emisi Gas Rumah Kaca Dari Material Konstruksi Bangunan-Bangunan Gudang Di Kabupaten Tangerang, dalam: Prosiding Seminar Nasional Teknik Sipil X - 2020. UMS, Surakarta, hlm. 385–389.
- Sakata, S., Aklilu, A.Z., Pizarro, R., 2024. Greenhouse gas emissions data: Concepts and data availability. <https://doi.org/10.1787/b3e6c074-en>
- Sandanayake, M., Zhang, G., Setunge, S., Li, C.-Q., Fang, J., 2016. Models and method for estimation and comparison of direct emissions in building construction in Australia and a case study. *Energy Build.* 126, 128–138. <https://doi.org/10.1016/j.enbuild.2016.05.007>
- Sarju, Setyawan, A., Wibowo, M.A., Handayani, F.S., 2025. Realization of Low Carbon Housing Construction: Analysis of Materials, Energy, Technology, and Policies. *E3S Web of Conferences* 650, 02058. <https://doi.org/10.1051/e3sconf/202565002058>
- Schäfer, M., Cerdas, F., Herrmann, C., 2024. Towards standardized grid emission factors: methodological insights and best practices. *Energy Environ. Sci.* 17, 2776–2786. <https://doi.org/10.1039/D3EE04394K>
- Selvakumar, P., Manjunath, T.C., Das, A., 2025. Carbon Footprint Analysis of Software Systems, dalam: *Green Software Engineering for Business Project Management*. IGI Global Scientific Publishing, hlm. 93–120. <https://doi.org/10.4018/979-8-3373-4652-6.ch005>
- Sharaf-Addin, H.H., Al-Dhubaibi, A.A.S., 2025. Carbon sustainability reporting based on GHG protocol framework: A Malaysian practice towards net-zero carbon emissions. *Environmental and Sustainability Indicators* 25, 100588. <https://doi.org/10.1016/j.indic.2025.100588>
- Shuangjian, J., Xiaoqing, Y., Yanwei, L., 2011. Assessment of CO₂e emissions of building materials, dalam: *2011 International Conference on Electronics, Communications and Control (ICECC)*. IEEE, hlm. 3578–3581. <https://doi.org/10.1109/ICECC.2011.6068060>
- Sipilä, A., Partanen, L., Porras, J., 2024. Carbon Footprint Calculations for a Software Company – Adapting GHG Protocol Scopes 1, 2 and 3 to the Software Industry. hlm. 442–455. https://doi.org/10.1007/978-3-031-53227-6_31

- Sizirici, B., Fseha, Y., Cho, C.-S., Yildiz, I., Byon, Y.-J., 2021. A Review of Carbon Footprint Reduction in Construction Industry, from Design to Operation. *Materials* 14, 6094. <https://doi.org/10.3390/ma14206094>
- Son, M., Lee, SeungHoon, Park, C., Lee, SeongHyeon, Son, S., Jung, S.P., 2025. Carbon Dioxide Reduction Strategies in the Construction Sector: Focus on Green Remodeling and Eco-Friendly Building Materials. *Journal of Korean Society of Environmental Engineers* 47, 594–609. <https://doi.org/10.4491/KSEE.2025.47.8.594>
- Sugiyono, P.Dr., 2017. *Metode Penelitian Kuantitatif, Kualitatif, Dan R&D*. Alfabeta, CV, Bandung.
- Suriyanon, N., Kanangkaew, S., Upayokin, A., Buakla, A., Boonsaeng, N., 2025. Carbon Footprint Assessment of a Bore Pile Contractor: A Case Study from Thailand. *The Open Construction & Building Technology Journal* 19. <https://doi.org/10.2174/0118748368409749250811055341>
- Tabrizikahou, A., Nowotarski, P., 2021. Mitigating the Energy Consumption and the Carbon Emission in the Building Structures by Optimization of the Construction Processes. *Energies (Basel)*. 14, 3287. <https://doi.org/10.3390/en14113287>
- Trisa, P.A., Aditama, S., Nuswantoro, W., Teknik Sipil, J., Palangka Raya, U., Raya, P., 2024. Analisis Emisi Karbon Pada Material Bangunan Gedung Tujuh Lantai dengan Metode BIM IX.
- UNEP, 2025. *Global Status Report for Buildings and Construction 2024/2025*.
- United Nations, 2015. *Paris Agreement*. Paris.
- Wang, T., Li, K., Liu, D., Yang, Y., Wu, D., 2022. Estimating the Carbon Emission of Construction Waste Recycling Using Grey Model and Life Cycle Assessment: A Case Study of Shanghai. *Int. J. Environ. Res. Public Health* 19, 8507. <https://doi.org/10.3390/ijerph19148507>
- Wang, X., Guo, L., Xue, G., Tan, J., Niu, W., Wu, Y., 2025. Toward Low-Carbon Power Systems: Reviewing Life Cycle Carbon Footprints of Diverse Generation Pathways. *Energies (Basel)*. 18, 6413. <https://doi.org/10.3390/en18246413>

- Wang, Y., Guo, C., Du, C., Chen, X., Jia, L., Guo, X., Chen, R., Zhang, M., Chen, Z., Wang, H., 2021. Carbon peak and carbon neutrality in China: Goals, implementation path, and prospects. *China Geology* 4, 1–27. <https://doi.org/10.31035/cg2021083>
- White, L. V., Aisbett, E., Pearce, O., Cheng, W., 2025. Principles for embedded emissions accounting to support trade-related climate policy. *Climate Policy* 25, 109–125. <https://doi.org/10.1080/14693062.2024.2356803>
- Wicaksono, A.D., Bayuaji, R., 2025. Evaluasi Efisiensi Embodied Carbon dari Spesifikasi Material Bangunan Hijau. *Jurnal Profesi Insinyur Universitas Lampung* 6. <https://doi.org/10.23960/jpi.v6n1.153>
- Woszczek, A., Child, M., Luoronen, M., Soukka, R., 2025. Opportunities to improve data quality of scope 3 emissions in the context of carbon neutrality: the case study of LUT University. *International Journal of Sustainability in Higher Education* 26, 207–225. <https://doi.org/10.1108/IJSHE-06-2024-0429>
- WRI, WBCSD, 2015. GHG Protocol. Scope 2 Guidance. World Resources Institute and World Business Council for Sustainable Development, Washington.
- WRI, WBCSD, 2004. The Greenhouse Gas Protocol. World Resources Institute and World Business Council for Sustainable Development, Washington.
- Yoshimoto, S., Amarnath, G., 2018. Application of a flood inundation model to analyze the potential impacts of a flood control plan in mundeni aru river basin, Sri Lanka. *Natural Hazards* 91, 491–513. <https://doi.org/10.1007/s11069-017-3143-5>
- Zhang, G., Sandanayake, M., Setunge, S., Li, C., Fang, J., 2017. Selection of emission factor standards for estimating emissions from diesel construction equipment in building construction in the Australian context. *J. Environ. Manage.* 187, 527–536. <https://doi.org/10.1016/j.jenvman.2016.10.068>
- Zhang, X., Wang, F., 2016. Hybrid input-output analysis for life-cycle energy consumption and carbon emissions of China's building sector. *Build. Environ.* 104, 188–197. <https://doi.org/10.1016/j.buildenv.2016.05.018>