



Application of the extended two-stage network DEA model for the biomass-biofuel logistics network design

Jae-Dong Hong^{a,*}  0000-0003-1095-1195

^a Industrial Engineering, South Carolina State University, Orangeburg, SC, United States

References

- [1] Q. Zhang, Q., Y. Hu, J. Jiao, and S. Wang, "The impact of Russia-Ukraine war on crude oil prices: an EMC framework," *Humanities and Social Sciences Communications*, vol. 11, no. 8, pp. 1-12, 2024, doi: 10.1057/s41599-023-02526-9.
- [2] J. D. Hong and J. Mwakalonge, "Biofuel logistics network scheme design with combined data envelopment analysis approach," *Energy*, vol. 209, p. 118342, 2020, doi: 10.1016/j.energy.2020.118342.
- [3] D. Pimentel, "Ethanol fuels: Energy balance, economics and environmental impacts are negative," *Natural Resources Research*, vol. 12, no. 2, pp. 127-134, 2003, doi: 10.1023/A:1024214812527.
- [4] S. Gold and S. Seuring, "Supply chain and logistics issues of bio-energy production," *Journal of Cleaner Production*, vol. 19, pp. 32-42, 2011, doi: 10.1016/j.jclepro.2010.08.009.
- [5] Y.-F. Huang, M.-W. Weng, and C.-J. Fu, "A two-stage sustainable production-inventory model with carbon credit demand", *Int J Ind Eng Manag*, vol. 15, no. 2, pp. 96-108, 2024, doi: 10.24867/IJEM-2024-2-350.
- [6] S. R. Poudel, M. Marufuzzaman, and L. Bian, "Designing a reliable biofuel supply chain network considering link failure probabilities," *Computers and Industrial Engineering*, vol. 91, pp. 85-99, 2016, doi: 10.1016/j.cie.2015.11.002.
- [7] P. Maheshwari, S. Singla, and Y. Shastri, "Resiliency optimization of biomass to biofuel supply chain incorporating regional biomass pre-processing depots," *Biomass Bioenergy*, vol. 97, pp. 116-131, 2017, doi: 10.1016/j.biombioe.2016.12.015.
- [8] N.T. Albashabsheh, and J. L. H. Stamm, "Optimization of Lignocellulosic biomass-to-biofuel supply chains with mobile pelleting," *Transportation Research Part E: Logistics and Transportation Review*, vol. 122, pp. 545-562, 2019, doi: 10.1016/j.tre.2018.12.015.
- [9] J. Ji, and N. Nananukul, "Supply chain for sustainable renewable energy from biomass," *International Journal of Logistics Systems and Management*, vol. 33, no. 4, pp. 568-590, 2019.
- [10] S. Y. Balaman, *Decision-making for biomass-based production chains: The basic concepts and methodologies*, Cambridge, MA, USA: Academic Press, 2019.
- [11] J. D. Hong, "Two-stage efficiency-based approach to biofuel supply chain logistics network design under the risk of disruptions," *International Journal of Industrial and Systems Engineering*, vol. 36, no. 3, pp. 339-360, 2020.
- [12] W. D. Cook, and J. Zhu, "DEA for two-stage networks: Efficiency decompositions and modeling techniques," in *Data envelopment analysis: A handbook on the modeling of internal structures and networks*, W. D. Cook, and J. Zhu, Eds, NY, USA: Springer, 2014, pp. 1-29.
- [13] J.-D. Hong, J. Mwakalonge, and K.-Y. Jeong, "Design of disaster relief logistics network system by combining three data envelopment analysis-based methods", *Int J Ind Eng Manag*, vol. 13, no. 3, pp. 172-185, 2022, doi: 10.24867/IJEM-2022-3-310.
- [14] C. Kao, *Network Data Envelopment Analysis: Foundation and Extensions*, NY, USA; Springer, 2017.
- [15] S. D. Eksioğlu, A. Acharya, L. E. Leightley, and S. Arora, "Analyzing the design and management of biomass-to-biorefinery supply chain," *Computers and Industrial Engineering*, vol. 57, no. 4, pp. 1342-1352, 2009, doi: 10.1016/j.cie.2009.07.003.
- [16] S. van Dyken, B. H. Bakken, and H. I. Skjelbred, "Linear mixed-integer models for biomass supply chains with transport, storage and processing," *Energy*, vol. 35, no. 3, pp. 1338-1350, 2010, doi: 10.1016/j.energy.2009.11.017.
- [17] T. Cui, Y. Ouyang, and A. M. Shen, "Reliable facility location under the risk of disruptions," *Operations Research*, vol. 58, no. 4, pp. 998-1011, 2010, doi: 10.1287/opre.1090.0801.

- [18] C. T. Ragsdale, *Spreadsheet Modeling & Decision Analysis: A Practical Introduction to Business Analytics*, 9th Edition, MA, USA; Cengage Learning, 2021.
- [19] L. Liang, F. Yang, W. D. Cook, and J. Zhu, "DEA models for supply chain efficiency evaluation," *Annals of Operations Research*, vol. 145, no. 1, pp. 35-49, 2006, doi: 10.1007/s10479-006-0026-7.
- [20] L. Liang, W. D. Cook, and J. Zhu, "DEA models for two-stage processes: Game approach and efficiency decomposition," *Naval Research Logistics*, vol. 55, pp. 643-653, 2008, doi: 10.1002/nav.20308.
- [21] C. Kao, and S. N. Hwang, "Efficiency decomposition in two-stage data envelopment analysis: An application to non-life insurance companies in Taiwan," *European Journal of Operational Research*, vol. 185, no. 1, pp. 418-429, 2008, doi: 10.1016/j.ejor.2006.11.041.
- [22] Y. Li, Y. Chen, L. Liang, and J. Xie, "DEA models for extended two-stage network structures," *Omega*, vol. 40, no. 5, pp. 611-618, 2012, doi: 10.1016/j.omega.2011.11.007.
- [23] EPA. "Tracked Sites in South Carolina with Biorefinery Facility Siting Potential." National Service Center for Environmental Publications (NSCEP). [Online]. Available: www.epa.gov/renewableenergyland/maps/pdfs/biorefinery_sc.pdf. [Accessed: 14-DEC-2023].