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DAFTAR PUSTAKA

Agustar, A., & Prawiraatmadja, W. (2024). A system dynamics model for rooftop solar PV system development in Indonesia. International Journal of Current Science Research and Review, 7(6). https://doi.org/10.47191/ijcsrr/v7-i6-96

Aguinis, H., & Bradley, K. J. (2014). Best practice recommendations for designing and implementing experimental vignette methodology studies. Organizational Research Methods, 17(4), 351–371. https://doi.org/10.1177/1094428114547952

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Al Irsyad, M. I., Halog, A., & Nepal, R. (2019). Estimating the impacts of financing support policies towards *photovoltaic* market in Indonesia: A social-energy-economy-environment model simulation. Journal of Environmental Management, 230(October 2018), 464–473. https://doi.org/10.1016/j.jenvman.2018.09.069

Alviannanda, T., & Lystianingrum, V. (2024). Business Model Innovation of Off Grid Public Electric Vehicles Battery Swap Station with *Solar* Powered. E3S Web of Conferences, 500, 03028. https://doi.org/10.1051/e3sconf/202450003028

Badan Pusat Statistik Republik Indonesia (2024). Realisasi pendapatan negara - tabel statistik. Badan Pusat Statistik Indonesia. https://www.bps.go.id/id/statistics-table/2/MTA3MCMy/realisasi-pendapatan-negara.html

Balta-Ozkan, N., Yildirim, J., Connor, P. M., Truckell, I., & Hart, P. (2021). Energy transition at local level: Analyzing the role of peer effects and socio-economic factors on UK *solar photovoltaic* deployment. Energy Policy, 148(PB), 112004. https://doi.org/10.1016/j.enpol.2020.112004

Bollinger, B., & Gillingham, K. (2012). Peer effects in the diffusion of *solar photovoltaic* panels. Marketing Science, 31(6), 900–912. https://doi.org/10.1287/mksc.1120.0727

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Branker, K., Pathak, M. J. M., & Pearce, J. M. (2011). A review of *solar photovoltaic* levelized cost of electricity. Renewable and Sustainable Energy Reviews, 15(9), 4470–4482. https://doi.org/10.1016/j.rser.2011.07.104

Burger, S., & Luke, M. (2017). Business models for distributed energy resources: A review and empirical analysis. Energy Policy, 109, 230–248. https://doi.org/10.1016/j.enpol.2017.07.007

Castle, C. J. E., & Crooks, A. T. (2006). Principles and concepts of agent-based modelling for developing geospatial simulations. University College London, Centre for Advanced Spatial Analysis. https://discovery.ucl.ac.uk/id/eprint/3342/

Chang, X., Li, J., Rodriguez, D., & Su, Q. (2016). Agent-based simulation of pricing strategy for agri-products considering customer preference. International Journal of Production Research, 54(13), 3777–3795. https://doi.org/10.1080/00207543.2015.1120901

Diyono, D., Cappon, H., Kujawa-roeleveld, K., & Keesman, K. J. (2023). Designing Sustainable Domestic Electricity Supply from Renewable Energy Mixes : Application to Java and Bali , Indonesia. Energies, 16(22), Article 7461. https://doi.org/10.3390/en16227461

Dong, C., Nemet, G., Gao, X., Barbose, G., Sigrin, B., & O'Shaughnessy, E. (2023). Machine learning reduces soft costs for *residential solar photovoltaic*s. Scientific Reports, 13(1), 1–14. https://doi.org/10.1038/s41598-023-33014-4

Drury, E., Miller, M., Macal, C. M., Graziano, D. J., Heimiller, D., Ozik, J., & Perry, T. D. (2012). The transformation of southern California's *residential photovoltaic*s market through third-party ownership. Energy Policy, 42, 681–690. https://doi.org/10.1016/j.enpol.2011.12.047

Duffie, J. A., & Beckman, W. A. (2013). *Solar* engineering of thermal processes. https://doi.org/10.1002/9781118671603

Erfian, A., Dipareza, A., Fathiah, S., Zuki, M., Hermana, J., & Fadli, A. (2025). Determining Carbon Dioxide Emission Factors of Indonesia Coal Fired Power Plants with CEMS

UNIVERSITAS
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Measurement Data. Aerosol and Air Quality Research, 25(1), 1–12. https://doi.org/10.1007/s44408-025-00002-4

Faiud, I., Schukat, M., & Mason, K. (2024). An agent-based modeling approach for simulating solar PV adoption: A case study of Irish dairy farms. Renewable Energy Focus, 51, 100653. https://doi.org/10.1016/j.ref.2024.100653

Field, A. P. (2017). Discovering statistics using IBM SPSS statistics. https://bvbr.bib-bvb.de:443/F?func=service&doc_library=BVB01&local_base=BVB01&doc_number=029907115&sequence=000001&line_number=0001&func_code=DB_RECORDS&service_type=MEDIA

Fu, C., Anantharaman, R., Jordal, K., & Gundersen, T. (2015). Thermal efficiency of coal-fired power plants: From theoretical to practical assessments. Energy Conversion and Management, 105, 530–544. https://doi.org/10.1016/j.enconman.2015.08.019

Green, M. A. (1982). *Solar* cells: Operating principles, technology, and system applications. Prentice-Hall.

Grimm, V., & Railsback, S. F. (2005). Individual-based modeling and ecology. Princeton University Press. https://doi.org/10.1515/9781400850624

Grimm, V., Berger, U., Bastiansen, F., Eliassen, S., Ginot, V., Giske, J., Goss-Custard, J., Grand, T., Heinz, S. K., Huse, G., Huth, A., Jepsen, J. U., Jørgensen, C., Mooij, W. M., Müller, B., Pe'er, G., Piou, C., Railsback, S. F., Robbins, A. M., ... DeAngelis, D. L. (2006). A standard protocol for describing individual-based and agent-based models. Ecological Modelling, 198(1–2), 115–126. https://doi.org/10.1016/j.ecolmodel.2006.04.023

Grimm, V., Berger, U., DeAngelis, D. L., Polhill, J. G., Giske, J., & Railsback, S. F. (2010). The ODD protocol: A review and first update. Ecological Modelling, 221(23), 2760–2768. https://doi.org/10.1016/j.ecolmodel.2010.08.019

Hafiya, A. N. (2024). AGENT-BASED MODELING AND SIMULATION IN DETERMINING BEEF PRICING STRATEGIES CONSIDERING CUSTOMER PREFERENCES. Universitas Gadjah Mada.

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Hartono, D., Anshory, A., Hastri, S., & Karina, N. (2021). Effect of COVID-19 on energy consumption and carbon dioxide emissions in Indonesia. Sustainable Production and Consumption, 28, 391–404. https://doi.org/10.1016/j.spc.2021.06.003

Haryadi, F., Simaremare, A., & Indrawan, H. (2021). Rooftop PV business model in Jakarta. IOP Conference Series Materials Science and Engineering, 1098(4), 042038. https://doi.org/10.1088/1757-899x/1098/4/042038

Heffron, R., et al. (2021). How different electricity pricing systems affect the energy trilemma: Assessing Indonesia's electricity market transition. Energy Economics, 107, Article 105663. https://doi.org/10.1016/j.eneco.2021.105663

International Energy Agency. (2022). Approximately 100 million households rely on rooftop solar PV by 2030. https://www.iea.org/reports/approximately-100-million-households-rely-on-rooftop-*solar*-pv-by-2030

International Energy Agency. (2024). Renewables 2023: Analysis and forecast to 2028. https://www.iea.org/reports/renewables-2023

International Energy Agency. (2020). Innovation landscape brief: Pay-as-you-go models. International Renewable Energy Agency. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Jul/IRENA_Pay-as-you-go_models_2020.pdf

International Renewable Energy Agency. (2021). Renewable power generation costs in 2020. International Renewable Energy Agency. https://www.irena.org/publications/2021/Jun/Renewable-Power-Costs-in

Jamal, L., et al. (2024). Development of nationwide multi-technology energy transition framework for intensive decarbonisation strategy in Indonesia. Process Integration and Optimization for Sustainability, 8, 1081–1106. https://doi.org/10.1007/s41660-024-00416-4

Joshi, S., Mittal, S., Holloway, P., Shukla, P. R., Ó Gallachóir, B., & Glynn, J. (2021). High resolution global spatiotemporal assessment of rooftop solar photovoltaics potential for

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GADJAH MADA
Pemodelan dan Simulasi Berbasis Agen dalam Penentual Adopsi dan Model Bisnis Residential Photovoltaic di Indonesia
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

renewable electricity generation. Nature Communications, 12, Article 5738. https://doi.org/10.1038/s41467-021-25720-2

Karima, H. Q. (2020). Pengembangan model dan simulasi berbasis agen untuk adopsi layanan bank sampah di Kota Semarang. Jurnal Al-Azhar Indonesia Seri Sains dan Teknologi, 5(3), 111–120. https://doi.org/10.36722/sst.v5i3.371

Kementerian ESDM. (2021). Rencana Usaha Penyediaan Tenaga Listrik (RUPTL) PT Perusahaan Listrik Negara (Persero) 2021-2030. Rencana Usaha Penyediaan Tenaga Listrik 2021-2030, 2019–2028. https://web.pln.co.id/stakeholder/ruptl

Kementerian Energi dan Sumber Daya Mineral. (2025). Kinerja sektor ESDM 2024: Lampui target, penuhi kebutuhan domestik, dan tingkatkan ketahanan energi (Siaran pers, Kementerian Energi dan Sumber Daya Mineral). https://www.esdm.go.id/id/media-center/arsip-berita/kinerja-sektor-esdm-2024-lampui-target-penuhi-kebutuhan-domestik-dan-tingkatkan-ketahanan-energi-

Kevin. (2025). PENGEMBANGAN MODEL AGENT BASED MODELING TERKAIT PENGARUH PERUBAHAN HARGA SAMPAH TERHADAP PROFIT BANK SAMPAH KOTA YOGYAKARTA. Universitas Gadjah Mada.

Langer, J., Quist, J., & Blok, K. (2021). Review of renewable energy potentials in Indonesia and their contribution to a 100% renewable electricity system. Energies, Article 7033. https://doi.org/10.3390/en14217033

Lee, M., & Hong, T. (2019). Hybrid agent-based modeling of rooftop *solar photovoltaic* adoption by integrating the geographic information system and data mining technique. Energy Conversion and Management, 183(December 2018), 266–279. https://doi.org/10.1016/j.enconman.2018.12.096

Lei, J., Gao, S., Hatziargyriou, N. D., Wei, X., Huang, T., & Wei, J. (2023). A novel community-based *photovoltaic* energy sharing business model incorporated in decentralized energy markets. 2022 4th International Conference on Electrical Engineering and Control Technologies (CEECT), 527–534. https://doi.org/10.1109/ceect59667.2023.10420778

UNIVERSITAS
GADJAH MADA
Pemodelan dan Simulasi Berbasis Agen dalam Penentual Adopsi dan Model Bisnis Residential Photovoltaic di Indonesia
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Liang, L., Wu, X., & Yang, M. (2025). Shadows behind the sun: Inequity caused by rooftop *solar* and responses to it. Applied Energy, 377(PB), 124528. https://doi.org/10.1016/j.apenergy.2024.124528

Macal, C. M., & North, M. J. (2010). Tutorial on agent-based modelling and simulation. Journal of Simulation, 4(3), 151–162. https://doi.org/10.1057/jos.2010.3

Mahajan, V., Muller, E., & Wind, Y. (Eds.). (2000). New-product diffusion models. Springer. https://link.springer.com/book/9780792377511

Masters, G. M. (2013). Renewable and efficient electric power systems (2nd ed.). Wiley-IEEE Press. https://www.wiley.com/en-ie/Renewable%2Band%2BEfficient%2BElectric%2BPower%2BSystems%2C%2B2nd%2BEdition-p-9781118633502

Messenger, R. A., & Abtahi, A. (2010). *Photovoltaic* systems engineering (3rd ed.). CRC Press. https://doi.org/10.1201/9781315218397

Mittal, M., & Sharma, C. (2012). Estimates of emissions from coal-fired thermal power plants in India. International Emission Inventory Conference 2012.

Mittal, M., Sharma, C., & Singh, R. (2014). Decadal emission estimates of carbon dioxide, sulfur dioxide, and nitric oxide emissions from coal burning in electric power generation plants in India. Environmental Monitoring and Assessment, 186, 6857–6866. https://doi.org/10.1007/s10661-014-3894-3

Newnan, D. G., Eschenbach, T. G., & Lavelle, J. P. (2012). Engineering economic analysis (11th ed.). Oxford University Press. https://books.google.com/books?id=JHTCYgEACAAJ

Nurwidiana, N. (2023). Barriers to adoption of photovoltaic system: A case study from Indonesia. Journal of Industrial Engineering and Education, 1(1), 80–89.

Nurwidiana, N., Sopha, B. M., & Widyaparaga, A. (2022). Simulating Socio-Technical Transitions of *Photovoltaic*s Using Empirically Based Hybrid Simulation-Optimization Approach. Sustainability (Switzerland), 14(9). https://doi.org/10.3390/su14095411

UNIVERSITAS
GADJAH MADA
Pemodelan dan Simulasi Berbasis Agen dalam Penentual Adopsi dan Model Bisnis Residential Photovoltaic di Indonesia
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Oberschelp, C., Pfister, S., Raptis, C., & Hellweg, S. (2019). Global emission hotspots of coal power generation. Nature Sustainability, 2, 113–121. https://doi.org/10.1038/s41893-019-0221-6

Omar, M. A. (2025). Assessing the Economic Impacts of Net Metering on *residential Solar Photovoltaic* Adoption: A Palestinian Case Study. International Journal of Energy Research, 2025(1). https://doi.org/10.1155/er/1370101

Palm, A., & Lantz, B. (2020). Information dissemination and *residential* solar PV adoption rates: The effect of an information campaign in Sweden. Energy Policy, 142, 111540. https://doi.org/10.1016/j.enpol.2020.111540

Pambudi, N. A., et al. (2023). Renewable energy in Indonesia: Current status, potential, and future development. Sustainability, 15(3), Article 2342. https://doi.org/10.3390/su15032342

Paramita, D., Hartono, B., Utomo, D. S., Arini, H. M., Mulyani, Y. P., Rizqiawan, A., Nahor, K. M. B., Spanellis, A., Beltran, M., Adrin, H. N., Baroroh, D. K., & Tjahjono, B. (2024). Exploring factors influencing intention and actual usage in household solar PV adoption. Cleaner and Responsible Consumption, 15, 100242. https://doi.org/10.1016/j.clrc.2024.100242

Power, M., Newell, P., Baker, L., Bulkeley, H., Kirshner, J., & Smith, A. (2016). The political economy of energy transitions in Mozambique and South Africa: The role of the Rising Powers. Energy Research & Social Science, 17, 10–19. https://doi.org/10.1016/j.erss.2016.03.007

Rogers, E. M. (2003). Diffusion of innovations (5th ed.). Free Press.

Rolffs, P., Ockwell, D., & Byrne, R. (2015). Beyond technology and finance: Pay-as-you-go sustainable energy access and theories of social change. Environment and Planning A, 47(12), 2609–2627. https://doi.org/10.1177/0308518X15615368

Romero, D., & Escudero, P. (2023). Adaptive learning in agent-based models: An approach for analyzing human behavior in pandemic crowding. Applied System Innovation, 6(6), Article 113. https://doi.org/10.3390/asi6060113

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Sandono, Y. P. (2020). Pengembangan model simulasi penentuan strategi harga cabai merah dengan mempertimbangkan preferensi pelanggan (Thesis, Universitas Gadjah Mada).

Sargent, R. G. (2013). Verification and validation of simulation models. Journal of Simulation, 7(1), 12–24. https://doi.org/10.1057/jos.2012.20

Schopfer, S., Tiefenbeck, V., & Staake, T. (2018). Economic assessment of *photovoltaic* battery systems based on household load profiles. Applied Energy, 223, 229–248. https://doi.org/10.1016/j.apenergy.2018.03.185

Schulte, E., Scheller, F., Sloot, D., & Bruckner, T. (2022). A meta-analysis of *residential* PV adoption: the important role of perceived benefits, intentions and antecedents in *solar* energy acceptance. Energy Research and Social Science, 84(October 2021), 102339. https://doi.org/10.1016/j.erss.2021.102339

Shakeel, S. R., Yousaf, H., Irfan, M., & Rajala, A. (2023). Solar PV adoption at household level: Insights based on a systematic literature review. Energy Strategy Reviews, 50, 101178. https://doi.org/10.1016/j.esr.2023.101178

Silalahi, D., Blakers, A., Stocks, M., Lu, B., Cheng, C., & Hayes, L. (2021a). Indonesia's vast *solar* energy potential. Energies, 14(17), 5424. https://doi.org/10.3390/en14175424

Silalahi, D., Blakers, A., Stocks, M., Lu, B., Cheng, C., & Hayes, L. (2021b). Solar PV resource assessment for Indonesia's energy future. In 2021 IEEE 48th *Photovoltaic* Specialists Conference (PVSC) (pp. 178–181). IEEE. https://doi.org/10.1109/PVSC43889.2021.9518969

Sopha, B. M., & Sakti, S. (2021). PEMODELAN DAN SIMULASI BERBASIS AGEN UNTUK SISTEM KOMPLEKS SOSIO-TEKNIKAL: Konsep, Metode, dan Aplikasi. UGM PRESS.

Susiati, H., et al. (2022). Site suitability-based spatial-weighted multicriteria analysis for nuclear power plants in Indonesia. Heliyon, 8(3), Article e09088. https://doi.org/10.1016/j.heliyon.2022.e09088

UNIVERSITAS
GADJAH MADA
Pemodelan dan Simulasi Berbasis Agen dalam Penentual Adopsi dan Model Bisnis Residential Photovoltaic di Indonesia
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Tambunan, H. B., et al. (2020). The challenges and opportunities of renewable energy source penetration in Indonesia: Case study of Java–Bali power system. Energies, 13(22), Article 5903. https://doi.org/10.3390/en13225903

Tarigan, E. (2020). Rooftop PV system policy and implementation study for a household in Indonesia. International Journal of Energy Economics and Policy, 10(1), 1–10. https://doi.org/10.32479/ijeep.9539

Tarigan, E. (2025). Role of *solar photovoltaic* energy in GHG emission reduction within Indonesia's long-term strategy for low carbon and climate resilience 2050. International Journal of Energy Economics and Policy. https://doi.org/10.32479/ijeep.18352

Tramošljika, B., Blecich, P., Bonefačić, I., & Glažar, V. (2021). Advanced ultra-supercritical coal-fired power plant with post-combustion carbon capture: Analysis of electricity penalty and CO_2 emission reduction. Sustainability, 13(2), 801. https://doi.org/10.3390/su13020801

Triana, D., Garniwa, I., Rosadi, A., & Martono, D. (2024). Performance analysis simulation of urban rooftop *photovoltaic* potential in Jakarta City, Indonesia. Environmental Research, Engineering and Management. https://doi.org/10.5755/j01.erem.80.4.34200

Valente, T. W. (1996). Social network thresholds in the diffusion of innovations. Social Networks, 18(1), 69–89. https://doi.org/10.1016/0378-8733(95)00256-1

Wang, N., Ren, Y., Zhu, T., Meng, F., Wen, Z., & Liu, G. (2018). Life cycle carbon emission modelling of coal-fired power: Chinese case. Energy. https://doi.org/10.1016/j.energy.2018.08.054

Whitaker, M., Heath, G., O'Donoughue, P., & Vorum, M. (2012). Life cycle greenhouse gas emissions of coal-fired electricity generation. Journal of Industrial Ecology, 16, S53–S72. https://doi.org/10.1111/j.1530-9290.2012.00465.x

Yulianita, A., et al. (2025). National energy security: An analysis of economic growth and energy consumption at the regional level in Indonesia. Journal of Applied Economic Research, 24(2), 415–437. https://doi.org/10.15826/vestnik.2025.24.2.014

UNIVERSITAS
GADJAH MADA
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Zhang, H., Vorobeychik, Y., Letchford, J., & Lakkaraju, K. (2016). Data-driven agent-based modeling, with application to rooftop solar adoption. *Autonomous Agents and Multi-Agent Systems, 30*, 1023–1049. https://doi.org/10.1007/s10458-016-9326-8