

Saeed Pourmasoumi Langarudi

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System Dynamics Group
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Research Interests

- System Dynamics
- Natural Resources Management
- Resilience
- Development economics
- Justice, Conflict, and Security

Education

- (2012 – 2017) Ph.D. in System Dynamics & Economics, Worcester Polytechnic Institute, Worcester, MA
- (2006 – 2009) M.Sc. in Economics (Economic Systems Planning), Isfahan University of Technology, Isfahan, IRAN
- (2001 – 2005) B.Sc. in Industrial Engineering, Azad University of Najafabad, Isfahan, IRAN

Appointments

- (2022 – present) Associate Professor, University of Bergen
- (2019 – 2022) Research Assistant Professor, New Mexico State University
- (2019 – present) Scientific Committee Member at the Iranian System Dynamics Society
- (2018 – present) Program Committee Member at the Computational Social Science Conference, the Computational Social Science Society of the Americas

- (2017 – 2019) Postdoctoral Research Scientist and Graduate Faculty at New Mexico State University
- (2015 – present) Co-chair of the Security Thread of the International System Dynamics Conference, System Dynamics Society
- (2010 – 2011) Lecturer of Economics at multiple higher education institutions including Payame Noor University, Andishmand Higher Education Institute, and Ghadir Higher Education Institute, Guilan, Iran
- (2009 – 2010) Compulsory-duty First Lieutenant at the Research Institute of the Law Enforcement of the Islamic Republic of Iran, Tehran, Iran

Teaching

- (Sep 2022 – present) SYSTEM DYNAMICS, graduate level, University of Bergen
 - GEO-SD303: Model-based Analysis and Policy Design
 - GEO-SD310: Writing course and project description (co-teaching)
- (Aug 2018 – Dec 2021) SYSTEM DYNAMICS, graduate level, New Mexico State University
- (Jan 2018 – May 2021) SPECIAL TOPICS IN SYSTEM DYNAMICS, graduate level, New Mexico State University
- (Apr 2016 – Jul 2016) GAMES FOR UNDERSTANDING COMPLEXITY (teaching assistant), undergraduate level, Worcester Polytechnic Institute
- (Dec 2010 – Dec 2011) ECONOMICS, undergraduate level, Payamet Noor University, Guilan, Iran

Publications

Journal Articles

- Sabie, Robert, Saeed P. Langarudi, Kevin Perez, Bruce Thomson, and Alexander Fernald. 2022. Conceptual Framework for Modeling Dynamic Complexities in Produced Water Management. *Water* 14 (15): 2341. <https://doi.org/10.3390/w14152341>.
- Atkins, Ashley E. P., Saeed P. Langarudi, and Alexander G. Fernald. 2021. Modeling as a Tool for Transboundary Aquifer Assessment Prioritization. *Water* 13 (19): 2685. <https://doi.org/10.3390/w13192685>.
- Langarudi, Saeed P., Carlos G. Silva, and Alexander G. Fernald. 2021. “Measure More or Report Faster? Effect of Information Perception on Management of Commons.” *System Dynamics Review*, 37(1): 72-92. <https://doi.org/10.1002/sdr.1677>
- Langarudi, Saeed P., Connie M. Maxwell, and Alexander G. Fernald. 2021. Integrated Policy Solutions for Water Scarcity in Agricultural Communities of the American Southwest. *Systems* 9 (2): 26. <https://doi.org/10.3390/systems9020026>.

- Langarudi, Saeed P., Robert P. Sabie, Babak Bahaddin, and Alexander G. Fernald. 2021. A Literature Review of Hybrid System Dynamics and Agent-Based Modeling in a Produced Water Management Context. *Modelling* 2 (2): 224-39. <https://doi.org/10.3390/modelling2020012>.
- Bai, Yining, Saeed P. Langarudi, and Alexander G. Fernald. 2021. System Dynamics Modeling for Evaluating Regional Hydrologic and Economic Effects of Irrigation Efficiency Policy. *Hydrology* 8 (2): 61. <https://doi.org/10.3390/hydrology8020061>.
- Langarudi, Saeed P. 2020. Revisiting the Natural Resource Curse Hypothesis Using Dynamic Simulation. *Journal of Economics and Modeling* 11 (3): 55-89. <https://doi.org/10.29252/jem.2021.184085.1337>.
- Moghadam Manesh, Mehdi, and Saeed P. Langarudi. 2020. Tragedy of the Commons in Using Groundwater Resources in Agriculture Sector (Case Study: Iran). *Journal of Strategic Management Studies* 11 (42): 77-98. http://www.smsjournal.ir/article_111610.html.
- Maxwell, Connie M., Saeed P. Langarudi, and Alexander G. Fernald. 2019. Simulating a Watershed-Scale Strategy to Mitigate Drought, Flooding, and Sediment Transport in Drylands. *Systems* 7 (4): 53. <https://doi.org/10.3390/systems7040053>.
- Page, Ashley, Saeed P. Langarudi, Sue Forster-Cox, and Alexander Fernald. 2019. A Dynamic Hydro-Socio-Technical Policy Analysis of Transboundary Desalination Development. *Journal of Environmental Accounting and Management* 7 (1): 87-115. <https://doi.org/10.5890/JEAM.2019.03.007>.
- Langarudi, Saeed P., Connie M. Maxwell, Yining Bai, Austin Hanson, and Alexander Fernald. 2019. Does Socioeconomic Feedback Matter for Water Models? *Ecological Economics* 159 (May): 35-45. <https://doi.org/10.1016/j.ecolecon.2019.01.009>.
- Langarudi, Saeed P., and Michael J. Radzicki. 2018. A Simulation Model of Katouzians Theory of Arbitrary State and Society. *Forum for Social Economics* 47 (1): 115-52. <https://doi.org/10.1080/07360932.2015.1051076>.
- Langarudi, Saeed, and Isa Bar-On. 2018. Utility Perception in System Dynamics Models. *Systems* 6 (4): 37. <https://doi.org/10.3390/systems6040037>.
- Langarudi, Saeed P., and Michael J. Radzicki. 2016. A Simulation Model of Katouzians Theory of Arbitrary State and Society. Translated by Emad Taghipour. *Iran Nameh* 30 (4): 66102. <http://irannameh.org/index.php/journal/article/view/2300>.
- Langarudi, Saeed P., Nader Shetab Boushehri, Behrooz Arbab Shirani, and Ali N. Mashayekhi. 2011. A System Dynamics Model for Analyzing Irans Energy-Economy System. *Sharif Journal of Science and Technology* 26-1 (2): 71-87. http://sjie.journals.sharif.edu/article_5181.html.

Book Chapters

- Langarudi, Saeed P., and Michael J. Radzicki. 2021. Blessing or Burden? Another Look at the Natural Resource Curse. In *Feedback Economics: Economic Modeling with System Dynamics*, edited by Robert Y. Cavana, Brian C. Dangerfield, Oleg V. Pavlov, Michael J.

Radzicki, and I. David Wheat, 31146. Contemporary Systems Thinking. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-67190-7_12.

- Zaini, Raafat M., and Saeed P. Langarudi. 2020. “To Share or Not to Share: Effect of Peer-to-Peer Mentoring on Dynamics of Graduate Life.” In *Proceedings of the 2018 Conference of the Computational Social Science Society of the Americas*, edited by Ted Carmichael and Zining Yang. Springer Proceedings in Complexity. Springer International Publishing. <https://doi.org/10.1007/978-3-030-35902-7>.
- Langarudi, Saeed P., and Michael J. Radzicki. 2013. Resurrecting a Forgotten Model: Updating Mashayekhis Model of Iranian Economic Development. In *Energy Policy Modeling in the 21st Century*, edited by Hassan Qudrat-Ullah, 197-233. Springer New York. http://dx.doi.org/10.1007/978-1-4614-8606-0_11.

Conference Papers

- Langarudi, Saeed P. 2022. Is Velocity Stock or Flow? A Note on Model Formulation. In International Conference of the System Dynamics Society 2021, 1:40829. Chicago, Illinois: System Dynamics Society. <https://www.proceedings.com/62774.html>
- Langarudi, Saeed P., Carlos G. Silva, and Alexander G. Fernald. 2022. Measurement versus Reporting: Levers to Improve Management of Commons. In International Conference of the System Dynamics Society 2021, 1:43145. Chicago, Illinois: System Dynamics Society. <https://www.proceedings.com/62774.html>
- Langarudi, Saeed P., Sajid Noor, and Kyle Eagar. 2022. Closed and Open Loop Oil Taxation Policies in New Mexico. In Proceedings of the System Dynamics Conference. Frankfurt, Germany: System Dynamics Society. <https://proceedings.systemdynamics.org/2022/abstracts/1057.html>.
- Langarudi, Saeed P., and Carlos G. Silva. 2017. Crop Price Volatility and Its Influence on Crop Patterns. In *Proceedings of the 2017 International Conference of The Computational Social Science Society of the Americas*, 4:1-4:10. CSS 2017. New York, NY, USA: Association for Computing Machinery (ACM). <https://doi.org/10.1145/3145574.3145579>.
- Langarudi, Saeed P. 2017. Export Strategy for Oil and Natural Gas: Aggressive or Conservatorial? In *Proceedings of the 1st National Conference of the Iranian System Dynamics Society*, 19. Sharif University of Technology, Tehran, Iran. https://www.civilica.com/paper-systemdynamic01-systemdynamic01_036.html
- Bai, Yining, Saeed P. Langarudi, and Alexander Fernald. 2017. Long-Term Dynamics of the Acequia Population in New Mexico. In *Proceedings of the 35th International Conference of the System Dynamics Society*. Cambridge, MA. <https://www.systemdynamics.org/assets/conferences/2017/proceed/papers/P1193.pdf>
- Langarudi, Saeed P., Diane M. Strong, Khalid Saeed, Sharon A. Johnson, Bengisu Tulu, John Trudel, Olga Volkoff, Lori R. Pelletier, Garber Lawrence, and Isa Bar-On. 2014. Dynamics of EHR Implementations. In *Proceedings of the 32nd International Conference of the System Dynamics Society*, 30. Delft, Netherlands: System Dynamics Society. <https://www.systemdynamics.org/assets/conferences/2014/proceed/papers/P1398.pdf>.

- Langarudi, Saeed P., and Nader Shetab Boushehri. 2008. A Review of National Strategic Energy Models. In *Proceedings of the 3rd International Strategic Management Conference*, 11. Tehran: Iran. https://www.civilica.com/paper-icsm03-icsm03_035.html

Other Publications

- Langarudi, Saeed P., Robert P. Sabie, Babak Bahaddin, and Alexander G. Fernald. 2021. Development of a Multi-Method Dynamic Simulation Model: Exploring Opportunities for Produced Water Reuse. *NM WRRI Technical Completion Report No. 391*. Las Cruces, NM: New Mexico Water Resources Research Institute, New Mexico State University. <https://nmwrri.nmsu.edu/tr-391/>.
- Langarudi, Saeed P. 2016. A System Dynamics Approach to the Political Economy of Resource-Dependent Nations. Ph.D. Dissertation, Worcester, MA: Worcester Polytechnic Institute. <https://digitalcommons.wpi.edu/etd-dissertations/439/>.
- Langarudi, Saeed P. 2009. A System Dynamics Model for Analyzing Irans Energy-Economy System. M.Sc. Thesis, Isfahan, Iran: Isfahan University of Technology.

Selected Talks and Guest Lectures

- 2023. Philosophy, Theory, and Practice of System Dynamics: Challenges and Confusions. Invited speech delivered virtually via Skype presented at the International Conference of System Dynamics and Systems Thinking, Alzahra University, Tehran, Iran, January 4.
- 2022. “Agent-Based vs System Dynamics Modeling.” Guest lecture at GEO-SD325: Client-based Modelling Project, University of Bergen (virtual), May 16.
- 2022. Systems Modeling for Groundwater Resiliency. Research presented at the Integrated Water Budget for Recharge Workshop, New Mexico Water Resources Research Institute, Las Cruces, NM (Virtual), January 18.
- 2021. Water-Economy Modeling and Policy Analysis to Mitigate Groundwater Depletion in Arid Regions. Guest Lecture presented at the System Dynamics Course I, Sharif University, Tehran, Iran (Virtual), December 21.
- 2021. System Dynamics: A Method for Transboundary Groundwater Resiliency Research. Panel discussion at the Two Nations One Water 2021: Binational Water Conference for Chihuahua, New Mexico, and Texas, Las Cruces, NM (Virtual), September 28.
- 2021. Measurement versus Reporting: Levers to Improve Management of Commons. Research paper presented at the 2021 International System Dynamics Conference, Chicago, IL (Virtual), July 28.
- 2021. Is Velocity Stock or Flow? A Note on Model Formulation. Research paper presented at the 2021 International System Dynamics Conference, Chicago, IL (Virtual), July 26.
- 2021. System Dynamics Modeling to Explore Produced Water Impacts on New Mexicos Water Budget. Panel discussion at the New Mexico Produced Water Research Consortium Mid-year Review, Virtual, June 22.

- 2020. Hybrid Dynamic Simulation Modeling for Managing Produced Water. Panel Discussion on Produced Water Research in New Mexico presented at the 65th Annual New Mexico Water Conference, Virtual, October 29.
- 2020. What Is Your SDory, Saeed Langarudi? Podcast hosted by Christine Tang, SD-Cast. Season 1, Episode 2, July 25.
- 2020. Blessing or Burden? Another Look at the Natural Resource Curse. Research paper presented at the 38th International System Dynamics Conference, Bergen, Norway (Virtual), July 20.
- 2019. Accelerating Research through International Network to Network Collaborations. Proposal Planning Workshop presented at the Border Water Solutions Meeting, Las Cruces, NM, August 2.
- 2019. System-Wide Policy Solutions for Water Issues. Research paper presented at the 37th International System Dynamics Conference, Albuquerque, NM, July 23.
- 2019. Economic Policies as Solution for Water Issues. Research paper presented at the Western Social Science Association Conference, San Diego, CA, April 27.
- 2019. Economic Policies as Solution for Water Issues. Invited speech delivered virtually via Skype presented at the 2nd National Conference of the Iranian System Dynamics Society, Shahid Beheshti University, Tehran, Iran, April 27.
- 2019. Can Economic Policies Provide Solution for Water Issues: Impact of Workforce Participation on Dynamics of Water Resources. Research project presented at the System Dynamics Winter Camp, University of New Mexico, Albuquerque, NM, January 16.
- 2018. Does Socioeconomic Feedback Matter for Water Demand Models? Research paper presented at the CSSSAs Annual Conference on Computational Social Science, Santa Fe, NM, October 27.
- 2018. Decision Processes in Natural Resources Management: A Socioeconomic Perspective. Research presented at the STEM Faculty Launch, Worcester Polytechnic Institute, Worcester, MA, October 4.
- 2017. Collaborative Development of a System Dynamics Model for Future Scenario Analysis in the Lower Rio Grande. Research proposal presented at the South Central New Mexico Stormwater Management Coalition Meeting, The Elephant Butte Irrigation District, Las Cruces, NM, December 18.
- 2017. A System Dynamics Analysis of Water Demand in the Lower Rio Grande. Research paper presented at the New Mexico Academy of Science Research Symposium, Albuquerque, New Mexico, USA, November 4.
- 2017. What is System Dynamics? Guest lecture presented at the Special Topic Lectures, Water Resources Research Institute, Las Cruces, NM, February 18.
- 2016. Documentation of System Dynamics Models for Formal Publication. Lecture at the Collective Learning Meetings, Worcester Polytechnic Institute, Worcester, MA, October 27.

- 2016. Formulation of A Theoretical Dynamic Model for Political Economy of Oil Curse. Research presented at the Collective Learning Meetings, Worcester Polytechnic Institute, Worcester, MA, May 26.
- 2016. Political Economy of Natural Resource Curse. Research presented at the 32nd System Dynamics Colloquium, Worcester Polytechnic Institute, Worcester, MA, April 22.
- 2015. “Introduction to System Dynamics.” Guest lecture (two sessions) for the graduate course SYS501 (Concepts of Systems Engineering), Worcester Polytechnic Institute, Worcester, MA, Sep 17-24.
- 2014. A Generic Model of Supply and Demand of Healthcare Services for the VA Healthcare System. Research report presented at the New England VERCs Monthly Seminar Series, World Wide Web, October 10.
- 2014. Veterans Demand for Healthcare Services in New England VA Healthcare System. Research presented at the 28th System Dynamics Colloquium, Worcester Polytechnic Institute, Worcester, MA, May 23.
- 2014. Dynamics of Supply and Demand for Healthcare Services in the New England VA Healthcare System. Poster presented at the Informs Conference on Business Analytics & Operations Research, Boston, MA, USA, March 31.
- 2013. Dynamics of Veterans Demand for Healthcare. Research report presented at the VISN1 Strategic Planning Committee Annual Meeting, Education Department, Edith Nourse Rogers Memorial Veterans Hospital, September 4.
- 2013. A Simulation Model for Analyzing Affordance Actualization During an EHR System Implementation. Research presented at the 26th System Dynamics Colloquium, MIT, Cambridge, May 31.

Projects

Principal Investigator

- (Sep 2022 – Oct 2022) System dynamics modeling session at the first annual workshop of the Transboundary Groundwater Resilience Research (TGRR) Network of Networks, Funded by New Mexico Water Resources Research Institute, Budget: \$12,251.
- (Jan 2020 – Jul 2021) Development of a Multi-method Dynamic Spatial Simulation Model: Exploring Opportunities for Produced Water Reuse, Funded by New Mexico State Appropriations for Research & Public Service Projects, Budget: \$75,000.

Co. Principal Investigator

- (Oct 2022 – Mar 2023) Systems mapping workshop at the African Sanitation Advocacy Partners Meeting, Funded by Bill and Melinda Gates Foundation, Budget: \$37,153.
- (Jan 2022 – Jan 2026) Strategic Fallowing for Sustainable Water and Thriving Agriculture, Funded by Foundation for Food and Agriculture Research and Thornburg Foundation, Budget: \$1,941,862.

- (Oct 2021 – Sep 2023) AccelNet-Design: Designing a Water, Data, and Systems Science Network of Networks to Catalyze Transboundary Groundwater Resiliency Research, Funded by National Science Foundation: Accelerating Research through International Network-to-Network Collaborations (AccelNet), Budget: \$250,000.

Researcher

- (Jul 2019 – Feb 2022) Assessment and Implementation Framework for Transboundary Brackish Groundwater Desalination in South-central New Mexico, Funded by the Department of Interior, Bureau of Reclamation, Budget: \$376,395.
- (Sep 2017 – Aug 2021) INFEWS/T1 Towards Resilient Food-Energy-Water Systems in Response to Drought Impacts and Socioeconomic Shocks, Funded by National Science Foundation, Budget: \$1,547,959.
- (Jan 2017 – April 2022) Maintaining and developing New Mexico Dynamic Statewide Water Budget Model, Sponsored by the State of New Mexico.
- (Jan 2017 – Oct 2020) Center for the Development and Use of Alternative Water Supplies, Funded by the Department of Interior, Bureau of Reclamation, Budget: \$1,850,642.
- (Jan 2017 – Sep 2018) Energize New Mexico, The New Mexico Experimental Program to Stimulate Competitive Research (NM EPSCoR): Social and Natural Science Nexus, Funded by the National Science Foundation EPSCoR Programs, Budget: \$20,000,000.

Research Assistant

- (Aug 2012 – Jan 2016) System dynamics models for Lean Enterprise deployment, Funded by the VA New England Healthcare System.
- (Aug 2012 – Jan 2016) A system dynamics approach to analyze supply and demand of healthcare services in the VA New England Healthcare System, Funded by the VA New England Healthcare System.
- (Aug 2012 – Jan 2016) Investigating the implementation of Electronic Health Records (EHR) in healthcare organizations; Funded by the Health Delivery Institute, Worcester Polytechnic Institute.

Academic Membership and Service

- (2021 – present) Co-founder and member of the Transboundary Groundwater Resilience Research Collaboration Network
- (2019 – present) Co-founder and member of Water Special Interest Group of the System Dynamics Society
- (2019 – present) Chair of selected sessions at the annual International Conferences of the System Dynamics Society
- (2019 – present) Member of the International Society of Ecological Economics
- (2019 – present) Volunteer mentor for the Student Chapter of the System Dynamics Society

- (2018 – present) Committee Member of the Computational Social Science Society of the Americas
- (2018 – present) Member of Teaching Academy, New Mexico State University
- (2015 – present) Reviewer of scientific publications and conference proceedings including:
 - Complexity
 - Ecological Modelling
 - Forum for Social Economics
 - International Conference of the System Dynamics Society
 - International Conference of the Computational Social Science Society of the Americas
- (Jul 2015) Volunteer member of the organizing team for the 33rd International System Dynamics Conference, Cambridge, MA
- (2015 – 2016) Volunteer coach for the Creative Learning Exchange’s DynamiQueST program: coached K-12 students during the DynamiQueST workshops at Worcester Polytechnic Institute where they and their teachers present their system dynamics projects and receive feedback from the field’s experts.
- (2014 – 2016) Co-organizer of the MIT-SUNY-WPI System Dynamics Colloquia
- (2013 – present) Member of WPI’s System Dynamics Club
- (2013 – 2017) Co-founder and member of WPI’s Collective Learning Meetings
- (2013 – 2016) Co-founder and organizer of Collective Learning Meeting (CLM), a peer mentoring setting at the Department of Social Science & Policy Studies, Worcester Polytechnic Institute
- (2012 – present) Member of the System Dynamics Society

Awards & Certificates

- Quality Matters (QM) certificate for successful development of an online course titled SYSTEM DYNAMICS, 14 May 2019.
- Best Paper Award of the 2018 Computational Social Science Conference for presenting Does Socioeconomic Feedback Matter for Water Models?, Computational Social Science Society of the Americas, Santa Fe, NM, 28 October 2018.
- Certificate for Completion of Responsible Conduct of Research, 2017 EPSCoR All-Hands Annual Meeting, University of New Mexico, 28 November 2017.
- Third Place Award for presenting A Simulation Model for Analyzing Affordance Actualization During an EHR System Implementation, GRAD 2013: The Innovation Exchange, Poster Symposium Celebrating Graduate Research, Worcester Polytechnic Institute, 13 March 2013.