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Areas of Expertise

Economics: Industrial economics, applied game theory, supply chain economics, contract theory, network economics, international trade, energy finance, investment decisions under uncertainty.

Energy: Energy transition and decarbonisation strategies, economics of hydrogen, unconventional energy resources, renewable (geothermal, wind, solar, biofuel, SAF) energy, environmental policy, geopolitics, international energy trade relationships, energy security.

Environment: planetary LCA analysis, climate justice, sustainability for overlapping generations, nature restoration and extended producer responsibility, food-water-energy nexus, water & land management in extractive industries.

Technology: Economics of technological change, productivity and adoption of low-emission technologies, technology choices and industry dynamics, clean technology solutions for transport / power generation / heavy industries.

Data & Complex System Analysis: data mining and prescriptive analytics, machine learning algorithms, interactive multi-objective optimization, complex network analysis, NLP in policy.

Education

- 1997 – 2001 **B.S. in Applied Physics and Mathematics**
Moscow Institute of Physics and Technology, Moscow, Russia.
- 2001 – 2003 **M.S. in Applied Physics and Mathematics**
Moscow Institute of Physics and Technology, Moscow, Russia.
M.S. thesis: “Application of Neural Networks to Russia’s Inflation Forecasting”.
- 2002 **M.S. Exchange student**
Nanyang Technological University, School of Computer Engineering, Artificial Intelligence Lab, Singapore.
Research project: “Neural Network Technology for Knowledge Discovery in Financial Databases”.
- 2003 – 2007 **Ph.D. in Economics and Management Science**
Humboldt University of Berlin, Germany, supervisor Prof. Dr. Dr. hc. F. Hubert.
Dissertation title: “Strategic Investment, Multilateral Bargaining and Coalition Formation Games: Analysis of the Eurasian Gas Supply Network”.
- 2007 – 2008 **Postdoctoral Fellow**

Department of Business and Economics, Catholic University of Leuven, Belgium, supervisor Prof. Dr. S. Proost.

Research projects: “Efficiency through Cooperation: Right Choice of Investment in Transport Routes”, “Strategic Cooperation and Competition in the European Spot Market for Natural Gas”.

2008 – 2011 **Postdoctoral Fellow**

Center for Energy Economics, The University of Texas at Austin, USA, supervisor Dr. M. Foss.

Research projects: “Analysis of LNG trade in Atlantic Basin”, “Framework for Risk Assessment of Geological CO₂ Storage”, “Compressed Air Wind Power Storage”, “Production Possibilities for Unconventional Natural Gas and Oil in the U.S.”

Employment & Academic Engagement

2002 – 2003 **Internship**, Sterling R. Group, Department of Enterprise Management, Moscow, Russia.

Project: “Oracle’s Business Intelligent Suit Applications in Russia’ Industrial Production”.

2001 – 2003 **Research Assistant**

Higher School of Economics, Department of Economics, Moscow, Russia.

Research project: “Analysis of Russian Electricity Industry: the Perspectives for Reforms”.

2003 – 2005 **Research and Teaching Assistant**

Humboldt University of Berlin, Department of Economics & Management, Heinx-Nixdorf Chair, Berlin, Germany.

Research project: “Analysis of the Eurasian Gas Supply Network”.

Teaching: “”

2011 – 2016 **Research Associate**

Center for Energy Economics, Bureau of Economic Geology, Jackson School of Geosciences, the University of Texas at Austin, USA.

Research projects: “The Role of Shale Gas in the U.S. Energy Transition: Recoverable Resources, Production Outlook, and Implications”, “The Production Outlook for the U.S. Shale Oil Supply”, “Marcellus Shale Play Resource Assessment and Long-term Outlook”.

2014 -2015 **Adjunct Professor/Lecturer**

Graduate Program in Operations Research and Industrial Engineering, Department of Mechanical Engineering, The University of Texas at Austin, USA.

Teaching: Fundamentals of Project Financing (BS/MS class), Energy Economics (MS class).

2016 – 2018 **Visiting Lecturer**

New Economic School, Energy Economics Program, Moscow, Russia.

Teaching: Natural Resource Evaluation and Development Strategy (MS class).

2016 – 2019 **Research Scientist**

Center for Energy Economics, Bureau of Economic Geology, Jackson School of Geosciences, the University of Texas at Austin, USA.

Research projects: “Technology and its Environmental Implications of Shale Oil and Gas Industry”, “Improved Methodology for Shale Gas Outlooks: The Role of Financial Constraints and Market Volatility”, “Machine-learning Approach to Unconventional Shale Plays Analysis”, “Water and Land-footprint Analysis for the Major U.S. Unconventional Reservoirs”, “Production Outlook for the Permian Basin: Economic Resiliency Analysis”.

- 2019 – pres. **Associate Professor** (W3) for Resource Economics
TUM School of Management, the Technical University of Munich.
Research projects: “Analysis of the International Energy Trade: Market dynamics, Energy Security, Resiliency to Shocks”, “Adoption of Clean Energy Technologies: Analysis of International H2 Demand and Supply Opportunities”, “The Evolution of Interfuel Substitution: The Implications of the Energy Transition”, “Decarbonization: Firm’s Strategies on Portfolio Transformation under Financial and Environmental Constraints”, “AI and Machine-Learning Approaches to the Power Market Analysis: Projecting the Impact of High Energy Prices and Generating Portfolio Changes”, “Ethical AI-based Solutions for Sustainable Mining”, “Water, Food, Energy Nexus: Addressing Security and Climate Resiliency Issues”, “Life-Cycle Assessment of New Technologies: Second-life and Recycling Possibilities Analysis in Automotive Industry”, “Pathways to Sustainability: Understanding the Intergenerational Economic, Environmental, and Social Trade-offs”.
- 2020 – **Research Director**, the Center for Energy Markets, TUM School of Management, Germany.
- 2023 – **Academic Director**, the MS Sustainable Transition Exchange Program (STEP) between the University of Texas at Austin and Technical University of Munich.
- 2019 – **Affiliated Researcher**, Center for Energy Economics, Bureau of Economic Geology, The University of Texas at Austin.
- 2021 – **Project Member** of the Munich Institute of Data Science (MDSI), the Technical University of Munich.
- 2021 – 2026 **Core Member** of the Munich Institute for Integrated Materials, Energy and Process Engineering (MEP), TUM.
- 2023 – **Senior Fellow** at the Foreign Policy Research Institute, Eurasia Program, PA, USA.
- 2023 – **EXIST Mentor** (and *co-founder*) for PRI-SET Start-up on linguistic and economic data analytics with AI.

Publications

1. Bonini, T. and S. Ikonnikova. *revised & resubmitted*. Adoption of Clean Hydrogen in Hard-to-abate Industries: Strategies for Economically Sustainable Transition, Emerald Corporate Governance Journal.
2. Gatscher, D. & S. Ikonnikova. *under revision*. The Interfuel Substitution Under Technological Bias: The Analysis of the U.S. Electricity Sector and its Evolution, Energy Journal.
3. Wan, K., Fan, B., & S. Ikonnikova. *accepted*. Modelling and Assessing Dynamic Energy Supply Resilience to Disruption Events: An Oil Supply Disruption Case in China, Energy Economics.
4. Corrigan, C. and S. Ikonnikova. 2024. The Use of AI in the Mining Industry: Insights and Ethical Considerations for Multi-objective Optimization, Extractive Industries and Society 17 (101440). <https://doi.org/10.1016/j.exis.2024.101440>
5. Madadkhani, S. and S. Ikonnikova. 2024. Verifying the Day-Ahead Power Price Drivers and Projecting the Future Under High Energy and Carbon Prices: A Machine Learning Approach, Energy Economics 129 (107241). <https://doi.org/10.1016/j.eneco.2023.107241>

6. Ikonnikova, S., Scanlon, B. R., & Berdysheva, S. A. 2023. A Global Energy System Perspective on Hydrogen Trade: A Framework for the Market Color and Size Analysis. *Applied Energy*, 330, 120267. <https://doi.org/10.1016/j.apenergy.2022.120267>
7. Ikonnikova, S. and Berdysheva, S. 2022. Managing Energy Security: The Analysis of Interfuel Substitution and International Energy Trade, *EconPol Forum*, CESifo, vol. 23(06), pages 23-27. RePEc:ces:epofo:v:23:y:2022:i:06:p:23-27
8. Ikonnikova, S., Berdysheva, S., del Carpio Neyra, V. 2022. The Role of Production Characteristics and Financing Constraints in Investment and the Elasticity of Supply Dynamics, *Journal of Economics and Business* 120 (106067). <https://doi.org/10.1016/j.jeconbus.2022.106067>
9. Berdysheva, S. and S. Ikonnikova. 2021. The Energy Transition and Shifts in Fossil Fuel Use: The Study of International Energy Trade and Energy Security Dynamics. *Energies*, 14(17), 5396. <https://doi.org/10.3390/en14175396>
10. Liu, W., Ikonnikova, S., Scott Hamlin, H., Sivila, L. and Pyrcz, M.J., 2021. Demonstration and Mitigation of Spatial Sampling Bias for Machine-Learning Predictions. *SPE Reservoir Evaluation & Engineering*, 24(01), pp.262-274. <https://doi.org/10.2118/203838-PA>
11. Scanlon, B., Reedy, R., Xu, P., Engle, M., Nicot, J.P., Yoxtheimer, D., Yang, Q., Ikonnikova, S., 2020, Can we Beneficially Reuse Produced Water from Oil and Gas Extraction in the U.S.? *Science of The Total Environment*, Vol. 717 (137085), <http://doi.org/10.1016/j.scitotenv.2020.137085>
12. Scanlon, B., Ikonnikova, S., Yang, Q., Reedy, R., 2020. Will Water Issues Constrain Oil and Gas Production in the U.S.? *Environmental Science & Technology*, <https://doi.org/10.1021/acs.est.9b06390>
13. Scanlon, B. R., Reedy, R. C., Xu, P., Engle, M., Nicot, J. P., Yoxtheimer, D., & Ikonnikova, S. 2020. Datasets associated with investigating the potential for beneficial reuse of produced water from oil and gas extraction outside of the energy sector. *Data in Brief*, 30, 105406. <https://doi.org/10.1016/j.dib.2020.105406>
14. Ikonnikova, S., Smye, K., Browning, J., Dommissie, R., Gülen, G., Hamlin, S., Tinker, S. W., Male, F., McDaid, G., Vankov, E., 2018, Report on Update and Enhancement of Shale Gas Outlooks, DOE Technical Report, <http://doi.org/10.2172/1479289>
15. Wolaver, B.D., Pierre J.P., Ikonnikova, S.A., Andrews, J.R., McDaid, G., Ryberg, W.A., Hibbitts, T.J., Duran, C.M., Labay, B.J., LaDuc, T.J., 2018, An Improved Approach for Forecasting Ecological Impacts from Future Drilling in Unconventional Shale Oil and Gas Plays, *Environmental Management*, vol. 62(2), pp. 323-333. <http://doi.org/10.1007/s00267-018-1042-5>
16. Ikonnikova, S.A., Male, F., Reedy, R. 2017. Projecting Water Footprint under Different Price Scenarios: Case study of the Eagle Ford Shale, *Environmental Science and Technology*, vol. 51 (24), pp. 14453–14461. <http://doi.org/10.1021/acs.est.7b03150>
17. Gherabati, S.A., Browning, J., Male, F., Ikonnikova, S.A., and McDaid, G. 2016. The impact of pressure and fluid property variation on well performance of liquid-rich Eagle Ford shale. *Journal of Natural Gas Science and Engineering*, vol. 33, pp. 1056-1068. <http://doi.org/10.1016/j.jngse.2016.06.019>
18. Ikonnikova, S., Gülen, G., Browning, J. 2016. Impacts of Price Differentials, Taxation, and Costs on Shale Gas Drilling: A Marcellus Case Study, *Proc. of SPE/IAEE Hydrocarbon Economics and Evaluation Symposium*, paper no. SPE-179985-MS, pp. 1-10. <http://doi.org/10.2118/179985-MS>
19. Ikonnikova, S., Vankov, E., Gülen, G., Browning, J. 2016. Understanding Shale Resource Production: What are the Key Variables? *Proc. of SPE/IAEE Hydrocarbon Economics and Evaluation Symposium*, paper no. SPE-179984-MS, pp. 1-13. <http://doi.org/10.2118/179984-MS>
20. Hammes, U., Eastwood, R., McDaid, G., Vankov, E., Gherabati, S.A., Shultz, A., Smye, K., Shultz, J., Potter, E., Ikonnikova, S., Tinker, S. 2016. Regional Assessment of the Eagle Ford group of South Texas, USA: Insights from lithology, pore volume, water saturation, organic richness and productivity correlations. *Interpretation*, SEG Journal, vol. 4(1), pp. SC125-SC150. <http://doi.org/10.1190/INT-2015-0099.1>

21. Ikonnikova, S. and Gülen, G. 2015. Impact of low prices on shale gas production strategies. *The Energy Journal*, vol. 36, pp. 43-62. <http://doi.org/10.5547/01956574.36.SI1.siko>
22. Gülen, G., Ikonnikova, S., Browning, J., Smye, K., Tinker, S.W. 2015. Production scenarios for the Haynesville shale play. *SPE Economics & Management*, vol. 7(4), pp. 138-147. <http://doi.org/10.2118/176022-PA>
23. Male, F., Islam, A.W., Patzek, T.W., Ikonnikova, S., Browning, J., Marder, M.P. 2015. Analysis of gas production from hydraulically fractured wells in the Haynesville shale using scaling methods. *Proc. of the SPE Unconventional Resources Conference*, paper no. 168993-MS, pp. 1-9. <http://doi.org/10.2118/168993-MS>
24. Tinker, S.W. and Ikonnikova, S. 2015. Shale gas: Hardly a fallacy. *Nature*, vol. 517, p. 553. <http://doi.org/10.1038/517553c>
25. Ikonnikova, S., Gülen, G., Browning, J., Tinker, S. 2015. Profitability of shale gas drilling: A case study of the Fayetteville shale play. *Energy*, vol. 81, pp. 382-393. <https://doi.org/10.1016/j.energy.2014.12.051>
26. Ikonnikova, S., Browning, J., Gülen, G., Smye K., and Tinker, S. 2015. Factors influencing shale gas production forecasting: Empirical studies of Barnett, Fayetteville, Haynesville, and Marcellus Shale. *Energy Economics and Environmental Policy*, vol. 4 (1), pp. 19-35. <http://doi.org/10.5547/2160-5890.4.1.siko>
27. Fu, Q., Horvath, S., Potter, E., Tinker, S., Roberts, F., Ikonnikova, S., Fisher, W. and Yan, J. 2015. Log-derived thickness and porosity of the Barnett Shale, Fort Worth basin, Texas: Implications for assessment of gas shale resources. *AAPG Bulletin*, vol. 99(1), pp. 119-141. <http://dx.doi.org/10.1306/07171413018>
28. Gülen, G., Ikonnikova, S., Browning, J., and Tinker, S. 2014. Fayetteville shale production outlook. *SPE Economics & Management*, vol. 7(2), pp. 19-35. <http://dx.doi.org/10.1306/07171413018>
29. Ikonnikova, S. and Zwart, G. 2014. Trade quotas and buyer power with an application to the EU natural gas market. *Journal of the European Economic Association*, vol. 12(1), pp. 177-199. <http://dx.doi.org/10.1111/jeea.12064>
30. Ikonnikova, S., Browning, J., Horvath, S., and Tinker, S. 2014. Well recovery, drainage area, and future drill-well inventory: Empirical study of the Barnett shale gas play. *SPE Reservoir Evaluation*, vol. 17(4), pp. 484-496. <http://dx.doi.org/10.2118/171552-PA>
31. Browning, J., Ikonnikova, S., Gülen, G., and Tinker, S. 2013. Barnett shale production outlook. *SPE Economics & Management*, vol. 5(3), pp. 89-104. <https://doi.org/10.2118/165585-PA>
32. Gülen, G., Ikonnikova, S., Browning, J., and Tinker, S. 2013. Well economics across ten tiers in low and high Btu (British thermal unit) areas, Barnett Shale, Texas. *Energy*, vol. 60(1), pp. 302-315. <http://dx.doi.org/10.1016/j.energy.2013.07.041>
33. Browning, J., Tinker S. W., Ikonnikova, S., Gülen, G., et al. 2013. Barnett shale model - 1: Study develops decline analysis, geologic parameters for reserves, production forecast. *Oil & Gas Journal*, vol. 111 (8), pp. 62-73.
34. Browning, J., Tinker S. W., Ikonnikova, S., Gülen, G., et al. 2013. Barnett shale model - 2 (Conclusion): Barnett study determines full-field reserves, production forecast. *Oil & Gas Journal*, vol. 111 (9), pp. 88-95.
35. Hubert, F. and Ikonnikova, S. 2011. Investment options and bargaining power: the Eurasian supply chain for natural gas. *The Journal of Industrial Economics*, vol. 59(1), pp. 85-116. <http://doi.org/10.1111/j.1467-6451.2011.00447.x>

Non-Peer-Reviewed Publications and Conferences Proceedings

36. Bonini, T. & S. Ikonnikova. 2024. How Can the European Hard-to-Abate Industries Navigate Decarbonisation? Analysing the Conditions for the Profitable Adoption of Clean Hydrogen, 45th IAEE International Conference Proceedings (*forthcoming*).
37. Ikonnikova, S. and G. Li. 2024. Enhanced extrapolative machine learning for electricity price forecasting in times of the energy transition, the 2024 INFORMS Annual Meeting (*forthcoming*).
38. Madadkhani, S. and S. Ikonnikova. 2024. Enhanced extrapolative machine learning for electricity price forecasting in times of the energy transition, the 2024 INFORMS Annual Meeting (*forthcoming*).
39. Ikonnikova, S. & S. Berdysheva. 2024. Modelling and Assessing Energy Supply Resilience to Disruption Events: Natural Gas Supply due to the Russian-Ukrainian War, 45th IAEE International Conference Proceedings (*forthcoming*).
40. Ikonnikova, S. 2024. International North-South Trade Corridors: The Increasing Role of the Central Asian Republics. FPRI Report (in review).
41. Gatscher, D. and S. Ikonnikova. 2023. Emission Trading or Lower Energy Prices? Re-Assessing the Impact of the Greenhouse Gas Initiative on the Energy Transition, Pathways to a Clean, Stable, and Sustainable Energy Future, 44th IAEE International Conference Proceedings.
42. Smye, K., Ikonnikova, S., Yang, Q., Casey, B., Carr, D., McDaid, G., Yut, K. 2023. The Role of Natural Gas and Geopolitics in the Permian Basin Development, 2023 Unconventional Resource & Technology Conference Proceedings.
43. Gatscher, D. and S. Ikonnikova. 2022. The Evolution of the Interfuel Substitution: A Study of the US Electricity Sector. In Mapping the Energy Future-Voyage in Uncharted Territory-, IAEE Proceedings, <http://www.iaee.org/proceedings/article/17753>
44. Berdysheva, S. and S. Ikonnikova. 2022. Firm Transition Strategies: The Effect of Emission Restrictions and Uncertainty on Asset Mix Choices. In Mapping the Energy Future-Voyage in Uncharted Territory-, IAEE Proceedings, <http://www.iaee.org/proceedings/article/17673>
45. Ikonnikova, S., Smye, K., Yang, Q., Berdysheva, S., and K. Yut. 2023, The Effect of Natural Gas on the Permian Basin: A New Look at the Well Economics and Production Outlook, URTEC-3870896-MS, SPE/AAPG/SEG Unconventional Resources Technology Conference
46. Madadkhani, S. and S. Ikonnikova. 2022. What Machine Learning Can Tell Us about the Drivers of Electricity Prices: The Case of Germany. In Mapping the Energy Future-Voyage in Uncharted Territory-, IAEE Proceedings, <http://www.iaee.org/proceedings/article/17644>
47. Simanjuntak, J., Fisher, W., Ikonnikova, S. 2021. Challenges and Opportunities for the Development of Shale Gas in Indonesia. World Petroleum Congress Proceedings 2021, WPC-23-0935. <https://onepetro.org/WPCONGRESS/proceedings-abstract/WPC23/3-WPC23/D031S003R004/515566>
48. Ikonnikova, S. and S. Berdysheva. 2021. Investing in Energy Transition: A Firm's Perspective. In Energy, COVID, and Climate Change, 2021st IAEE Proceedings. https://iaee2021online.org/download/contribution/abstract/740/740_abstract_20210601_113608.pdf
49. Smye, K. M., Ikonnikova, S., Yang, Q., McDaid, G., & Goodman, E. .2020. Geologic Variability and Well Productivity in US Oil Plays: The Efficiency of Completion Intensity and New Designs in Various Geologic Contexts. In Unconventional Resources Technology Conference Proceedings, pp. 1709-1718. <https://library.seg.org/doi/abs/10.15530/urtec-2020-3317>
50. Ikonnikova, S., Yang, Q., Smye, K., & McDaid, G. 2020. Revisiting Production Outlooks of the Eagle Ford and Bakken Plays: Analysis of the Well Productivity and Play Economics Changes Over the Last 5 Years. In SPE/AAPG/SEG Unconventional Resources Technology Conference Proceedings, URTEC-2020-3029-MS, <https://doi.org/10.15530/urtec-2020-3029>
51. Qian, Y., Male, F., Ikonnikova, S. A., Smye, K., McDaid, G., & Goodman, E. 2020. Permian Delaware basin Wolfcamp a formation productivity analysis and technically recoverable resource assessment. In SPE/AAPG/SEG Unconventional Resources Technology Conference Proceedings, URTEC-2020-3167-MS. <https://doi.org/10.15530/urtec-2020-3167>

52. Ikonnikova, S., Yang, Q., Smye, K., and McDaid, G., 2020, Revisiting Production Outlooks of the Eagle Ford and Bakken Plays: Analysis of the Well Productivity and Play Economics Changes Over the Last 5 Years. Unconventional Resources Technology Proceedings, 9 pp., <https://doi.org/10.15530/urtec-2020-3029>
53. Ikonnikova, S. A., Yang, Q., Scanlon, B. R., & McDaid, G. 2019. Workflow for Developing Spatially Resolved Production Outlooks in an Unconventional Play: Case Study, Bakken Play, United States. In AGU Fall Meeting Abstracts (Vol. 2019, pp. H51L-1638). <https://ui.adsabs.harvard.edu/abs/2019AGUFM.H51L1638I/abstract>
54. Ikonnikova, S., Reedy, R. C., Hamlin, H. S., Lemons, C. R., and Scanlon, B. R., 2018, Evaluating cumulative water risks from shale oil production: Permian Basin case study, Proc. of AGU Fall meeting 2018, Washington, DC, H21I-1754
55. Ikonnikova, S. and Tinker, S. 2010. Technology, entry, and uncertainties: Analysis of the U.S. shale gas industry development. IAEE Proceedings.
56. Ikonnikova, S., Volkov, D., Gulen, G., and Makaryan, R. 2009. Strategic model of LNG arbitrage: Analysis of LNG trade in Atlantic Basin. AIChE Proceedings.
57. Ikonnikova, S. 2007. Games in the Eurasian gas supply network: Multinational bargaining, strategic investment, and hold-up. MPRA Paper 17852.

Book Chapters

- Ikonnikova, S., Schluter, A., Brandner, B. 2022. The Rising Role of Prosumers in the Energy System, Ch. 3 in Schlüter, A., & Bernabé-Moreno, J. (eds.). Sustainable and Smart Energy Systems for Europe's Cities and Rural Areas, eISBN: 978-3-446-47175-7, <https://doi.org/10.3139/9783446471757.018>
- Ikonnikova, S., Schluter, A., Brandner, B. 2021. Der Prosumer im Zentrum des digitalen Energiesystems, Ch. 3 in Schlüter, A., & Bernabé-Moreno, J. (eds.). Das Energiesystem der Zukunft in Smart Cities und Smart Rural Areas. Carl Hanser Verlag, eISBN: 978-3-446-46897-9, <https://doi.org/10.3139/9783446468979>
- Hubert, F., and Ikonnikova, S. 2004. Cross subsidies in Russian electric power tariffs, in Trends in infrastructure regulation and financing: international experience and case studies from Germany, edit. by von Hirschhausen, C., Beckers, T., and Mitusch, K., Edward Elgar Publishing, Ltd.

Contract Reports

1. Goodman, E., Casey, B., Ikonnikova, S., Smye, K. & K. Yut. 2022. The Update on the Tight Oil Resource Recovery in the U.S. Tight Oil Resource Assessment (TORA) Research Consortium Proceedings.
2. Ikonnikova, S., Yang, Q., & E. Goodman. 2022. Haynesville Well Productivity Analysis, TRR Estimates, and Production Outlook Scenarios. Tight Oil Resource Assessment (TORA) Research Consortium Proceedings.
3. Ikonnikova, S., Yang, Q., & E. Goodman. 2022. Permian Basin Production Outlook: What to Expect with Higher Prices? Tight Oil Resource Assessment (TORA) Research Consortium Proceedings.
4. Smye, K., Goodman, E., Casey, B., Carr, D., McDaid, G., Bhattacharya, S., Ikonnikova, S., Yang, Q., Shuster, M., 2022, Permian Basin Oil and Gas in Place, Final Report Prepared for the U.S. Energy Information Administration, BEG Publications.
5. Ikonnikova, S., Yang, Q., Smye, K., & McDaid, G. 2020. Production Outlooks of the Eagle Ford and Bakken Plays: Analysis of the Well Productivity and Play Economics. Tight Oil Resource Assessment (TORA) Research Consortium Proceedings.
6. Smye, K. M., Ikonnikova, S., Yang, Q., McDaid, G., & Goodman, E.. 2020. Geologic Variability and Well Productivity in US Oil Plays: The Efficiency of Completion Intensity and New Designs in Various Geologic Contexts. Tight Oil Resource Assessment (TORA) Research Consortium Proceedings.
7. Ikonnikova, S., del Carpio Neyra, V., and Gulen, G., 2019, Drilling and investing across the Permian Basin analysis: modeling needs and capabilities (ext. abs.): Tight Oil Resource Assessment (TORA) Research Consortium Annual Meeting, p. 81-85

8. Ikonnikova, S., Hamlin, H. S., Yang, Q., del Carpio Neyra, V., Gulen, G., and Fairhurst, B., 2018, Individual well productivity and profitability of Midland Wolfcamp A and B wells (ext. abs.): Tight Oil Resource Assessment (TORA) Research Consortium Annual Meeting, p. 89-95.
9. Ikonnikova, S., Yang, Q., del Carpio Neyra, V., and Gulen, G., 2018, Update on the Bakken and Three Forks production outlook (ext. abs.): Tight Oil Resource Assessment (TORA) Research Consortium Annual Meeting, p. 47-51.
10. del Carpio Neyra, V., Ikonnikova, S., 2019, Well economics to development strategies (ext. abs.): Tight Oil Resource Assessment (TORA) Research Consortium Annual Meeting, p. 87-91.
11. Ikonnikova, S., Gülen, G., Lemons, C., Male, F., McDaid, G., Smye, K., Vankov, E. 2018. Update and Enhancement of U.S. Shale Gas Outlooks. *Report to the Department of Energy*, 99 p.
12. LaDuc, T. J., Wolaver, B. D., Pierre, J. P., Duran, C. M., Labay, B. J., Ryberg, W. A., Hibbitts, T. J., Roelke, C. E., Fujita, M. K., Wright, I. M., Surya, G. S., Shank, C. J., Andrews, J. R., Ikonnikova, S., and McDaid, G., 2018, Final Report: Collaborative Research on the Natural History of the Enigmatic Spot-Tailed Earless Lizard (*Holbrookia lacerata*) in Texas: The University of Texas at Austin (<http://dx.doi.org/10.18738/T8/C1C7X7>), contract report prepared for Texas Comptroller of Public Accounts, under contract no. 14-000769, 259 p.
13. Ikonnikova, S., Gülen, G., Lemons, C., Male, F., McDaid, G., Smye, K., Vankov, E. 2018. Update and Enhancement of U.S. Shale Gas Outlooks. *Report to the Department of Energy*, 99 p.
14. Ikonnikova, S., Browning, J., Scanlon, B., Gülen, G., Lemons, C., Vankov, E., McDaid, G., Smye, K.. 2018. Evolution of Shale Oil and Gas Drilling Technology and its Environmental Implications. *Report to the Alfred P. Sloan Foundation*, 25 p.
15. Ikonnikova, S., Tinker, S., Browning, J., Dommissie, R., Gherabati, A., Gülen, G., Hammes, H., Hamlin, S., Idzior, R., Lemons, C., Male, F., McDaid, G., Marder, M., Medlock, K., Potter, E., Reedy, R., Scanlon, B., Smye, K., Vankov, E., Walsh, M. 2016. Role of Shale Oil in the U.S. Energy Transition: Recoverable Resources, Production Rates, and Implications. *Final Report to the Alfred P. Sloan Foundation*, 197 p.
16. Ikonnikova, S., Smye, K., Browning, J., Gulen, G., Male, F., McDaid, G., Potter, E., Tinker, S., Vankov, E. 2015. Marcellus Shale: Enhanced Reserves and Production Forecast, *Final Report to the Alfred P. Sloan Foundation*, 26p.
17. Tinker, S., Ikonnikova, S., Hammes, U., Gherabati, A., Smye, K., Browning, J., Gülen, G., McDaid, G., Male, F., Medlock, K., Patzek, T., Potter, E., Shultz, J., Idzior, R., Hwang, A., Vankov, E. 2014. The Role of Shale Oil in Future U.S. Energy Supply: Recoverable Resources, Production Rates, and Implications, *Midterm Report to the Alfred P. Sloan Foundation*, 31 p.
18. Tinker, S., Ikonnikova, S., Browning, J., Ettehad, A., Fisher, W., Fu, Q., Grote, C., Gülen, G., Horvath, S., Male, F., Medlock, K., Patzek, T., Potter, E., Roberts, F., Seithheko, L., Smye, K. 2014. Recoverable Resources, Production Rates, and Implications, *Final Report to the Alfred P. Sloan Foundation on Role of Shale Gas in the U.S. Energy Transition*, 108 p.
19. Tinker, S., Ikonnikova, S., Browning, J., Fisher, W., Fu, Q., Gülen, G., Horvath, S., Male, F., Medlock, K., Patzek, T., Potter, E., Roberts, F. 2012. Recoverable Resources, Production Rates, and Implications: Barnett Shale. *Midterm Report to the Alfred Sloan Foundation*, 71 p.
20. Tinker, S., Ikonnikova, S., Browning, J., Fisher, W., Fu, Q., Gülen, G., Horvath, S., Male, F., Medlock, K., Patzek, T., Potter, Seithheko, L., June 2012, Mid-Term Report, Role of Shale Gas in the U.S. Energy Transition: Recoverable Resources, Production Rates, and Implications: Fayetteville Shale Play: Arkoma Basin, Arkansas and Haynesville Shale Play: East Texas and West Louisiana. *Midterm Report to the Alfred P. Sloan Foundation*, 230 pages.
21. Ikonnikova, S., Bryce, Robert and Tinker, S. 2010. Driving forces of Natural Gas Demand, White paper on The Natural Gas Demand Workshop, *Report to the Alfred P. Sloan Foundation*.
22. Tinker, S., Ikonnikova, S., Fisher, W. L., and Bryce, R., 2010, Taking Natural Gas Seriously, White paper on The Natural Gas Supply Workshop, *Report to the Alfred P. Sloan Foundation*.

External funding

2024-2027	BMBF grant for French-German research on Development on Hydrogen: “Modeling Infrastructure Development & Strategies for Expansion of Trade of Clean H ₂ (MINDSET Clean H ₂)”, German side coordinator and lead PI, co-Applicant jointly with DIW Berlin and CentraleSupélec, France.
2024-2025	Project Week grant for “Multi-Stakeholder Conflicts in Mining Critical Materials: Compromising in Choosing Sustainability Strategies”, learning through experience course with a visit to Erzberg open pit iron ore mine, jointly with TUM School of Social Sciences, TUM Ethical AI Institute, and TUM School of Engineering and Design.
2023	Munich+AI prototype development grant for “PRISET – linguistic AI-based policy analysis platform” development.
2023	TUM Global Incentive grant for Strategic Partnership Engagement with Kwame Nkrumah University of Science and Technology (KNUST, Ghana) in support of “Responsible AI for the Extractive Industries” project, PI.
2022 – 2026	Allianz SE project “Sustainability Analysis: Life Cycle Assessment of Vehicle Repairs”, single PI.
2022 – 2025	TUM Institute for Ethics in AI project “The Potential for AI in the Extractive Industries to Promote Multi-objective Optimization”, lead PI, jointly with TUM School of Engineering and Design and TUM School for Social Sciences.
2021 – 2024	Munich Data Science Institute (MDSI) fellowship “Machine Learning and the Value of Data in Renewable Energy Economics”.
2021 – 2022	The U.S. Energy Information Administration grant “Analysis of the Permian Basin Oil and Natural Gas Well Productivity Drivers”, participating researcher.
2018 – 2019	Total E&P research project “Study of Near Wellbore Facies and Horizontal Wells Productivity: Permian and Eagle Ford play analysis”, participating researcher.
2017 – 2018	Exxon Mobil research project “Clay-rich Unconventional Shales: Productivity Drivers Analysis”.
2016 – 2018	The U.S. Department of Energy grant “Update and Enhancement of Shale Gas Outlooks”, single PI.
2016 – 2017	Alfred Sloan Foundation grant “Technology and its Environmental Implications: Evolution of Shale Oil and Gas Industry”, single PI.
2015 – 2016	Alfred Sloan Foundation project “Water Demand for Five Major U.S. Unconventional Reservoirs Relative to Water Supplies”, participating researcher.
2014 – 2016	Alfred Sloan Foundation grant “The Role of Shale Oil in Future U.S. Energy Supply III”, co-PI (60%).
2014 – 2015	Alfred Sloan Foundation grant “Marcellus Shale Play Resource Assessment and Production Outlook”, single PI.
2011 – 2013	Alfred Sloan Foundation grant “The Role of Shale Gas in the U.S. Energy Transition: Recoverable Resources, Production Rates, and Implications”, co-PI (40%).
2010 – 2011	Alfred Sloan Foundation grant “Taking Natural Gas Seriously”, co-PI (40%).
2009 – 2010	The U.S. Department of Energy grant “20 Percent Wind Energy in 2030: Overcoming the Challenges, Techno-economic modeling of the integration of 20% wind and large-scale storage in ERCOT by 2030”, participating researcher.

2008 – 2009 The U.S. Department of Energy grant “Developing a comprehensive risk assessment framework for geological storage of CO₂”, participating researcher.

Awards

- Winner of the Munich+AI Pitch Night with PRISET Startup, July, 2023.
- Top breakout speaker at the U.S. Energy Information Administration Energy Conference, Washington DC, June, 2015.
- 2011 and 2015 Bureau of Economic Geology Career Development Publication Awards.
- Research paper award, the Association of International Petroleum Negotiators, 2009.
- Programm zur Förderung der Chancengleichheit für Frauen Post-Doc-Stipendium (Equal Opportunities for Women in Research Scholarship), 2007 - 2008.
- Marie Curie Fellowship for the Infrastructure Modeling and Policy Workgroup, 2006.
- Best Student Paper Award at the 26th United States Association for Energy Economics North American Conference, 2006.
- German Academic Exchange Service (DAAD) scholarship, 2005.
- Economic Society of Humboldt University of Berlin scholarship, 2003 – 2005.

Supervision of doctoral and postdoctoral students

2019 – 2023 Sofia Berdysheva, the Technical University of Munich.
Ph.D. thesis: “Energy transition from micro and macro perspectives”,
Graduation: June 2023.
Moved to a postdoctoral researcher position at the UT Austin, USA.

2021 – 2024 Daniel Gatscher, the Technical University of Munich.
Ph.D. thesis: “Understanding the interfuel transition: Applications of novel econometric techniques”.
Graduation: August 2024.
Moved to E.ON Germany.

2021 – 2024 Shiva Madadkhani, the Technical University of Munich.
Ph.D. thesis: “Essays on the Power Sector Decarbonisation: A Machine Learning Approach”.
Graduation: exp. March 2025.

2022 – 2025 Tommaso Bonini, the Technical University of Munich.
Ph.D. thesis: “Essays on the Economic Potential of Clean Hydrogen”.
Graduation: exp. August 2025.

2023 – 2026 Niclas Kurzmann, the Technical University of Munich.
Ph.D. thesis: “Sustainability Analysis: Life Cycle Assessment of Vehicle Repairs”.
Co-mentored by Allianz SE.
Graduation: exp. February 2026.

2023 – 2026 Gen Li, the Technical University of Munich.
Ph.D. thesis: “Multiobjective Optimization for Sustainable Extractive Industries Development”.

Co-mentored by TUM Institute for Ethics and AI.

Graduation: exp. May 2026.

2021 – 2022 Lucy McAllister, postdoctoral researcher of sustainability,
TUM Center for Energy Markets.
Moved to Assistant Professor at Denison University, USA.

2018 – 2020 Victor del Neyra, postdoctoral researcher, UT Austin.
Moved to Economic Modeler at Aurora Energy Research, UK.

Conference, Workshop, and other Public Presentations

1. Technologies for Sustainability in Mining: Choosing the Path for Better Future, *invited talk at Annual Mining On Top Africa (MOTA) Conference on Europe-Africa Partnerships*, Paris, July, 2024
2. Factors Determining H2 Demand: The Role of Infrastructure and Regional Certification Differences, *invited talk at EPRG Workshop*, Cambridge, May, 2024
3. Global Perspective on Hydrogen Trade: A framework for the market color and size, *invited talk at the DIW Workshop*, Berlin, Germany, February, 2024
4. On the Role of H2 System Boundaries: The Effect of Emissions Intensities on the Trade Dynamics, *MIT-TUM Workshop*, Boston, MA, USA, October, 2023.
5. H2 Market Dynamics: The Role of Transportation & its CO2 Footprint, *invited talk at The Munich Hydrogen Symposium*, Munchen, Germany, October, 2023.
6. Ethical AI for Mining: Choosing the Path for Sustainable Future, *invited talk at the Responsible AI Forum 2023*, Munich, Germany, September 2023.
7. Changing Tides in the Black Sea Region: Energy Security in the Black Sea Region, *invited talk at FPRI Eurasia Program Conference*, Tbilisi, Georgia, June 2023.
8. Delaware Basin and Midland Basin Productivity and Drilling Evolution: The outlook for Permian Basin, *invited talk at TORA Research Consortium Meeting*, the University of Texas at Austin, TX, June, 2023.
9. The Potential for AI in the Extractive Industries to Promote Multi-objective Optimization, *invited talk at TUM – KNUST Conference on the Responsible AI and Ethics – A Panacea to Digital Transformation in Sub-Saharan Africa*, online, March, 2023.
10. The Evolution of the Interfuel Substitution: Challenges and Opportunities Brought by the Energy Transition, *American Economic Association Conference*, New Orleans, LA, USA, 2023.
11. Transition to Carbon Neutrality: Financial & Environmental Trade-offs, *TUM Research Festival*, Munich, Germany, November, 2022.
12. Advantages and Disadvantages of Machine Learning in the Power Sector Decarbonisation, *Keynote speech at the Applied Energy Symposium, MIT A+B*, July, 2022.
13. Exploring the Dynamics of the Global LNG market, *Keynote talk at 2022 FLAME Conference*, Amsterdam, Netherlands, May, 2022.
14. The Future of Natural Gas in Europe, *invited talk at Cambridge EPRG Workshop*, Cambridge University, UK, December, 2022.
15. The Effect of Natural Gas on the Permian Basin: A New Look at the Well Economics and Production Outlook, *invited talk at TORA Research Consortium Meeting*, the University of Texas at Austin, TX, November, 2022.
16. Energy Demand and Supply Outlook: The Future of Natural Gas, *invited talk at UT-TORA Research Workshop*, Austin, TX, USA, November, 2022.
17. The Future of Natural Gas Market: Pricing and Balancing of Spot- and Long-term Trade, *United States Association for Energy Economics Conference*, Houston, TX, October, 2022.

18. New Energy Realm in Making: Transformation of EU and Global Energy Markets, *CEM – GRIPS Meeting*, Technical University of Munich, September, 2022.
19. What Machine Learning Can Tell Us About the Drivers of Electricity Prices: the Case of Germany, *43rd International Association for Energy Economics Conference*, Tokyo, Japan, August, 2022.
20. Economics and Production Outlook: The Future of the U.S. Unconventional Natural Gas, *Quantum PE Meeting*, Houston, TX, July, 2022.
21. Permian Basin Outlook: What to Expect with High Prices on Oil and Natural Gas Production, *TORA Research Consortium Meeting*, Austin, TX, USA, June 2022.
22. Energy Transformation of Europe and Eurasia after the Second Ukraine War, Energy Transformation of Europe and Eurasia after the Second Ukraine War, *invited talk at Baker Institute, Rice University – Institute for Russian and East European Studies, University of Pennsylvania Round Table*, June, 2022.
23. The Global Energy Transition: The Future Roles of Hydrogen, *invited talk at Cambridge Workshop on the Future Energy*, Cambridge, UK, June, 2022.
24. Potential of the Permian Basin, *the U.S. EIA – BEG, invited talk, the University of Texas at Austin Workshop*, online, May, 2022.
25. Is Hydrogen Economy Possible? From Micro to Macro System Analysis, *invited talk at the Center for Energy Economics, the University of Texas at Austin, TX, the U.S*, November, 2021.
26. Towards Carbon Neutrality: The Research Agenda for Hydrogen, *invited talk at Linde GmbH, Gases Division*, Munich Germany, October, 2021.
27. The Trade-off between Financial and Production Capabilities: Analysis of Investment and the Elasticity of Supply Dynamics, *the European Economic Association Virtual 2021 Conference*, August, 2021.
28. What Factors Influencing the Adoption of Green Hydrogen: A Global Perspective the 11th *Energy Colloquium of the Munich School of Engineering*, Technical University of Munich, 2021.
29. Is There a Winner: A Study of Competition Among Hydrogen Technologies, *Energy, COVID, and Climate Change, 1st IAEE Online Conference*, June, 2021.
30. Towards Carbon Neutrality in Energy and Transportation: The Role of Hydrogen, 2020, *MIT CEEPR Workshop*, Webinar Series, 2020.
31. Revisiting Production Outlooks of the Eagle Ford and Bakken Plays: Analysis of the Well Productivity and Play Economics Changes Over the Last 5 Years, *SPE/AAPG/SEG Unconventional Resources Technology Conference*, 2020.
32. From Shale to LNG: New Horizons and New Risks, *Future Energy Asia*, 2020, Bangkok, Thailand
33. Enhanced Methodology to Understand Well Productivity and Production Outlook: The Analysis of the Marcellus Play, *TORA Meeting*, Austin, TX, 2019.
34. What may Europe expect from developments in the major U.S. shale gas and oil plays? *FLAME 2019*, Amsterdam, Netherlands, 2019.
35. The Latest on Unconventional Resources and Their Development, *OTC Norwegian Delegation Breakfast*, 2019, Houston, Texas
36. Energy and Geopolitics: The Role of the U.S. Unconventional Resources, *Energy Week*, the University of Texas at Austin, 2019.
37. Where New Technologies Will Lead: A look at the Permian and other plays, *American Business Conference*, Houston, Texas, 2019.
38. The U.S. Unconventional Resource: Production Capabilities and Outlook, *JOGMEC Meeting*, Austin, Texas, 2019.
39. Evaluating Cumulative Water Risks from Shale Oil Production: Permian Basin Case Study, *American Geophysical Union*, Fall Meeting, 2018.
40. The Effect of Technology on Importance of Geologic Parameters for Shale Well Productivity: Cross-Play Analysis, *invited talk at INFORMS Conference*, Phoenix, Arizona, 2018.

41. The Price Elasticity of Shale Gas Supply: Financing Constraints and Resource Endowment, invited talk at *the U.S. Association of Energy Economists Conference*, Washington DC, 2018.
42. What changed in the U.S. shale in five years: Geology, Technology, and Economics, invited talk at *Energy Information Administration's Energy Forecasting Forum*, Washington DC, 2018.
43. Water – Energy Nexus: Production Outlook for Water and Natural Resources Production from the Major U.S. Shale Plays, invited talk at *National Council for Science and the Environment Conference*, Washington DC, 2018.
44. The Categorization and Assessment of Hydrocarbon Resource Potential in Clay-rich Unconventional Shales and Analysis of The Effect of Ductility on Shale Productivity, project talk at *Exxon Mobil*, Houston, TX, 2018.
45. The Future of the U.S. Unconventional Resource: Geology, Technology, Markets, panel talk at *National Royalty Owners Association meeting*, Dallas, TX, September, 2017.
46. Well Economics and Production Outlook for Bakken and Three Forks, *Unconventional Resource and Technology Conference*, Austin, TX, August, 2017.
47. The U.S. Shale Gas Resource: Outlook for the Industry Reshaping Global Energy, keynote lecture at *Conference on the Economics of Natural Gas*, Paris, France, June, 2017.
48. Water Demand and Supply in Shale Oil and Gas Production, keynote lecture at *Water-Energy Nexus Experts Meeting*, Department of Energy, Washington DC, June, 2017.
49. Production Outlook for the U.S. Shale Gas Production: Implications for the World LNG Trade, invited lecture at *Oxford Institute for Energy Studies*, Oxford, UK, October 2017.
50. Assessment of Shale Resources: Learnings and Insights from the Study of Six Major Shale Plays in the U.S., invited lecture at *China University of Petroleum*, Qingdao, China, September 2017.
51. From Shale Geology to Production Outlook: Integrated Approach to Analyze Shale Resources, invited guest lecture at *Society of Petroleum Engineers*, Austin Section, TX, May, 2017.
52. Resource and Productivity Assessment of the Bakken and Three Forks Play, keynote lecture at *DUG Conference*, Denver, CO, March, 2017.
53. From Geology to Reserves to Production Outlook: Integrated Approach to Analyze Shale Resources, *Lawrence Livermore National Laboratory*, Livermore, CA, February, 2017.
54. From Geology to Reserves to Production Outlook: Integrated Approach to Analyze Shale Resources, *Lawrence Livermore National Laboratory*, Livermore, CA, February, 2017.
55. Geology, Economics, and Environment: Integrated Approach to Analyze Shale Resources, *Lawrence Berkeley National Laboratory*, Berkeley, CA, February, 2017.
56. Rigorous Unconventional Resource Assessment: Implications for Long-term Planning and Governance, *National Academy of Sciences*, December, 2016
57. Shale Plays: An Integrated Look, *National Association of Royalty Owners*, Dallas, TX, October, 2016.
58. Integrated Analysis of Six Major U.S. Shale Gas and Oil Basins: Reserve and Production Scenarios, *AAPG 2016*, Cancun, Mexico, September, 2016.
59. Well Economics and Production Outlook of the Eagle Ford Shale play, *Unconventional Resource and Technology Conference*, San Antonio, TX, August, 2016.
60. Impacts of Price Differentials, Taxation, and Costs on Shale Gas Drilling: A Marcellus Case Study, *SPE/IAEE Conference*, Houston, TX, May, 2016.
61. Integrated Analysis of Six Major U.S. Shale Gas and Shale Oil Basins, *UNECE Expert Group on Resource Classification*, Geneva, Switzerland, April, 2016.
62. Shale Gas and Shale Oil: The U.S. Experience and its Global Implications, presented at the *Ministry of Natural Resources*, Beijing, China, March, 2016.
63. The U.S. Shale Gas Production Outlook: An Integrated Approach, *Southern Gas Association*, November, 2015.
64. Resource Evaluation and Development: Interdisciplinary Approach, *Pennsylvania State University*, State College, PA, October, 2015.

65. Fracking education: Interdisciplinary approach, Panel Discussion, *Natural Gas Forum*, Washington, DC, October, 2015.
66. Shale production outlook models: Important enhancements, *EIA Energy Conference*, Washington, DC, June, 2015.
67. Shale Plays in North America: Lessons Learned and Global Implications, *International Association for Energy Economics Conference*, May, 2015.
68. Shale gas production elasticity: How past shapes the future, *Oxford Institute for Energy Studies*, UK, April, 2015.
69. Shale gas development: Lessons for the future, *Texas Electricity Cooperatives: 14th Annual Directors Conference*, Austin, TX, 2015.
70. Shale gas development: The role of uncertainties, *the U.S. Energy Information Administration*, Washington, DC, 2014.
71. Shale gas outlook: Present and future, *the U.S. Office of Fossil Energy*, Washington, DC, 2014.
72. Marcellus shale gas: Analysis of uncertainties, *Strategic Department*, Range Resource, Austin, TX, 2014.
73. Shale gas: Well economics and production outlook, *Center for Energy Studies*, Rice University's Baker Institute for Public Policy, Houston, TX, 2014.
74. Shale gas economics and production outlook, *World Petroleum Congress*, Moscow, Russia, 2014.
75. Reserve and production forecasts for shale gas systems, *Committee on Resource Estimation*, AAPG Conference, Houston, TX, 2014.
76. Shale gas production in Texas: Present and future, *ERCOT Scenario Analysis Workshop*, Austin, TX, 2014.
77. Reserve and production forecast for the Barnett, Fayetteville and Haynesville Shale plays, *lecture to East Texas Geological Society*, Tyler, TX, 2014.
78. Shale gas future: *Briefing to Assistant Secretary for Fossil Energy*, Chris Smith, and staff, Washington DC, 2014.
79. Shale gas future, *the Alfred P. Sloan Foundation meeting*, New York, NY, 2014.
80. Shale gas resource and resource estimation and production outlook, *SIPES/DGS Symposium*, Dallas, TX, 2013.
81. Production outlook for Barnett shale play, *the U.S. Energy Information Administration*, Washington, DC, 2013.
82. Barnett shale reserves and production, *Potential Gas Committee Meeting*, Marco Island, FL, 2013.
83. Inferred refracturing study on the Barnett play: Exploring the future impact, *the United States Association for Energy Economics*, Austin, TX, 2012.
84. Barnett Shale Production Model and Economics, *Gulf Coast Association of Geological Societies*, Austin, TX, 2012.
85. Technology, entry, and uncertainties: Analysis of the U.S. shale gas industry development, *International Association for Energy Economics*, Stockholm, Sweden, 2011.
86. Strategic investment and contract choice: Analysis of the global LNG market, *the 7th International Industrial Organization Conference*, Boston, MA, 2009.
87. Improving the buyer power on the EU gas market Coordination, Restrictions, or Diversification? *The 39th European Association for Research in Industrial Economics Conference*, Ljubljana, Slovenia, 2009.
88. Strategic model of LNG arbitrage: analysis of LNG trade in Atlantic Basin: presented at *International Association for Energy Economics Conference*, San Francisco, CA, 2009.
89. Competition and countervailing power in the European gas market: Pitfalls of the liberalization, *the 6th International Industrial Organization Conference*, Arlington, VA, 2008.
90. Challenges of the liberalization of the European gas market: is GasPEC real? *European Gas Seminar*, Moscow, Russia, 2007.

91. Global emission game: formation of international environmental coalitions and emission reductions, the 5th *International Industrial Organization Conference*, Savannah, GA, 2007.
92. Issues of strategic Investments and multilateral bargaining in the European gas industry, *CPB Netherlands Bureau for Economic Policy Analysis*, The Hague, Netherlands, 2007.
93. Games the parties of Eurasian gas supply network play: analysis of strategic investment, hold-up, and multinational bargaining, the 26th *United States Association for Energy Economics*, Ann Arbor, Michigan, 2006.
94. Games the parties of Eurasian gas supply network play: analysis of strategic investment, hold-up, and multinational bargaining, *European Association for Research in Industrial Economics Conference*, Amsterdam, Netherlands, 2006.
95. Games the parties of Eurasian gas supply network play: analysis of strategic investment, hold-up, and multinational bargaining, the 5th *International Industrial Organization Conference*, Boston, Massachusetts, 2006.
96. Games the parties of Eurasian gas supply network play: analysis of strategic investment, hold-up, and multinational bargaining, *the World Congress of the Game Theory Society*, Evanston, Illinois, 2006.
97. Strategic value of investments in international gas transportation systems: analysis of the Eurasian gas supply network, *International Trade and Logistics: Corporate Strategies and Global Economy Conference*, Le Havre, France, 2005.
98. Hold-up, multilateral bargaining, and strategic investment: the Eurasian supply chain for natural gas, *European Association for Research in Industrial Economics Conference*, Berlin, Germany, 2004.
99. Hold-up, multilateral bargaining, and strategic investment: the Eurasian supply chain for natural gas, *Strategic Planning Department meeting*, Wintershall AG, Kassel, Germany, 2004.
100. Hold-up, multilateral bargaining, and strategic investment: the Eurasian supply chain for natural gas, *American Economic Association Conference*, Philadelphia, PA, USA, 2004.
101. Strategic investment and bargaining power in supply chains: a Shapley value analysis of the Eurasian gas market: presented at 18th *European Economic Association Conference*, Stockholm, Sweden, 2003.
102. Strategic investment and bargaining power in supply chains: a Shapley value analysis of the Eurasian gas market, *European Association for Research in Industrial Economics Conference*, Helsinki, Finland, 2003.

Interviews, Podcasts and Media Coverage

- EU-Sanktionen treffen erstmals russisches LNG – schwere Folgen für Putin? Frankfurter Ring, June 2024, <https://www.fr.de/wirtschaft/russland-wirtschaft-sanktionen-eu-putin-lng-folgen-verluste-zr-93142450.html>
- Is Energy Crisis over in Europe, interview to Phoenix Hong Kong-headquartered Television serving mainland China and Hong Kong, January, 2023.
<https://share.fengshows.com/article.html?id=82dcfaa2-568e-407b-8d30-6221a6e1db58&time=1673386738882%3FchannelID%3Dr06&channelCode=r06&fbclid=IwAR1IWNLfosDGijLRMzymbRU2uqgvloWIEJlyUwUPQAw-rGcDmR9hG3pJV0Y>
- Merkel steht zu ihrer Russland-Politik: Nun rumort es in den eigenen Reihen, comment to IPPEN.MEDIA (Frankfurter Rundschau Online), October, 2022.
<https://www.fr.de/politik/russland-gas-merkel-putin-ukraine-krieg-cdu-kiesewetter-kritik-exklusiv-91857468.html>
- “Ukraine War Forces Europe to Keep Long-Term Gas Deals...”, Bloomberg.com, May 2022, <https://www.bloomberg.com/news/articles/2022-05-04/war-forces-europe-to-keep-long-term-gas-deals-it-once-resisted>
- "Japan can be a role model", Mirage, Technology, March 2022, <https://www.miragenews.com/japan-can-be-a-role-model-741956/>

- On Hydrogen and its Role in the Energy Transition, *solo expert interview to TILclimate Podcast, MIT Environmental Solutions Initiative*, February 2022.
<https://climate.mit.edu/podcasts/til-about-hydrogen-energy>
- Geht uns das Gas aus?, Diskussion at *Redezeit NDR Podcast*, April, 2022.
<https://www.ndr.de/nachrichten/info/Geht-uns-Gas-aus,audio1102612.html>
- Wo kommt die Energie in Zukunft her? Interview for MIT Technology Review, published at 3/2022 issue, <https://www.heise.de/select/tr/2022/3/2206808010504538896>

Professional Service

- 2023 – Mentor for EXIST – University-Based Business Start-Ups program, Germany.
- 2023 – Member of the One Planet Network, UNEP - UN Environment Programme on Sustainability Goals.
- 2022 – Member of the University of Cambridge Decarbonisation Network.
- 2022 – Member of the TUM Mission Network Circular Economy (CircularTUM).
- 2021 – UNECE Sustainable Energy Expert Group, recurring invited participant.
- 2021 – 2026 Core Member of the Munich Institute for Integrated Materials, Energy and Process Engineering (MEP), TUM.
- 2022 – 2024 Vertretungsversammlung Studierendenwerk München und Oberbayern (Student Union Representative Meeting), Member of the board from the Technical University of Munich.
- 2021 Global Council for Science and the Environment (GCSE), formerly the National Council for Science and the Environment (NCSE), invited reviewer.
- 2019 – 2024 External Member, Graduate Study Committee, Energy and Earth Resources Graduate Program, Jackson School of Geosciences, UT Austin.
- 2015 – 2019 Member, Graduate Study Committee, Energy and Earth Resources Graduate Program, Jackson School of Geosciences, UT Austin.
- 2015 – 2016 Chair, Endowment Committee of the Jackson School of Geosciences, UT Austin.
- 2010 – 2014 Member, Endowment Committee of the Jackson School of Geosciences, UT Austin.

Further Academic Engagement

- 2023 TUM Sustainability Day, Workshop on Sustainability in Mining
- 2023 TUM European Union Week, co-organizer & moderator;
- 2023 TUM Business Game, Juror;
- 2022 Young Economic Summit (YES!), Scientific Partner, Team Supervisor;
- 2022 TUM Sustainability Day, contributor.

Membership in professional societies

- International & United States Association for Energy Economics;
- American Social Science Association;
- International Industrial Organization Society;

- European Economic Association.

Reviewer services

- Journal reviewer for Energy Journal, Energy Economics, Energy, Energies, Applied Energy, Energy Policy, Environmental Science & Technology, Clean Production, Sustainability.
- Grant reviewer for Deutsche Forschungsgemeinschaft (DFG) and the Department of Energy's Energy-Water Nexus Crosscut Program.
- Conference proposals and paper reviewer for the Global Council for Science and the Environment.

Teaching activities

MS & upper BS level classes (all taught in English):

- International Trade I: Country Perspective,
The Technical University of Munich, School of Management, WS 2019-2023.
- International Trade II: Global Firm Perspective,
The Technical University of Munich, School of Management, SS 2020-2024.
- Network Economics I,
The Technical University of Munich, School of Management, WS 2019-2023.
- Network Economics II,
The Technical University of Munich, School of Management, SS 2020-2023.
- Applied Economic Analysis of Decarbonisation Strategies, Advanced Seminar,
The Technical University of Munich, School of Management, WS 2022 – 2023.
- Economics of Energy and Technology, Advanced Seminar,
The Technical University of Munich, School of Management, WS 2021 – 2023.
- Studying the Transition to Clean and Sustainable Future, Research Seminar,
The Technical University of Munich, School of Management, WS 2021 – 2024.
- Natural Resource Evaluation and Development Strategy,
The New Economic School, Moscow, Russia, Spring 2016, 2017, 2018.
- Engineering economics, ME 353,
The University of Texas at Austin, Spring 2014, Spring 2015
- Energy Economics, contributing lecturer,
McCombs Business School at The University of Texas at Austin, Fall 2014.
- Competitive strategy, teaching assistant,
Humboldt University of Berlin, WS 2007/2008.
- Power games in energy markets, teaching assistant,
Humboldt University of Berlin, WS 2006/2007.

Professional trainings (all taught in English)

- Evaluation of Unconventional Resources: An Integrated Approach, August 2017,
Executive Professional-Development Training, The University of Texas at Austin.
- Business Intelligence System in Oracle, May 2003,
Client training assistant in a Sterling R. Group, Department of Enterprise Management.

Project Studies

- 2024 Eco-labeling in Vehicle Repair: Analyzing the Economic and Technical Perspectives in Anal-
ogy to Food Labeling, with Allianz AG.
- 2024 Hydrogen Policy Informatics Using NLP, with PRISET.
- 2023 Dashboard for the Sustainable Mining Industry, with KNUST and TUM Ethics and AI.

- 2023 Feasibility Assessment of Combined Offshore Wind Rollout Plans in Europe until 2040, with DNV company.
- 2022 Cross-country comparison of factors affecting the demand and supply of hydrogen, with the Center for Houston Future, TX, US and Linde.