

Shardul Tiwari

Department of Social Sciences, Michigan Technological University, Academic Office Building
1400 Townsend Drive, Houghton, 49931, Michigan, USA
+1 616 419 0705; shardult@mtu.edu; Twitter: [@HuskyShardul](https://twitter.com/HuskyShardul)

PROFILE

- Interdisciplinary scholar with strong research and analytical skills, interested in energy justice, international relations, sustainable energy transition, and the intersection of energy and climate change policy.
 - Sector experience: Energy and environmental policy, climate justice, energy efficiency, demand Side management, health and nutrition, international climate policy making.
 - Experience supporting projects and research in three regions (Europe: Germany, Sweden; South Asia: India; Nepal, North America: United States)
 - Fluent in English, Hindi; working knowledge of Nepali and German; beginner Spanish.
-

EDUCATION

- Doctor of Philosophy (PhD), Environmental and Energy Policy 2022
Michigan Technological University (MTU), Houghton, USA
Dissertation: *The Energy Transition through an energy justice approach: A pumped underground storage hydro study through a social economic and technical lens*
Advisors: Dr. Chelsea Schelly & Dr. Roman Sidortsov
- Master of Science (MSc), Power Engineering 2016
Brandenburg University of Technology, Cottbus, Germany
Thesis: *Demand Side Management (DSM) in Nepal: Assessing the impact of selected DSM measure's in Nepal electricity sector*
Advisors: Dr. Felix Musgens & Dipl-Vw Sebastian Kreuz
- Bachelor of Technology (B.tech) Honors, Mechanical Engineering 2012
Uttarakhand Technical University, Dehradun, India
Thesis: *Designing and construction of compressor less portable refrigerator using upcycled materials*

RESEARCH EXPERIENCE

- Postdoctoral Scholar, Michigan Technological University, USA** 2023-present
- Leading data collection and analysis to develop a socio-techno-economic energy service resilience model
 - Leading research on development of an energy storage facility in underground mine in Midwestern region
- Research Assistant, Michigan Technological University, USA** 2022
- Leading research data collection and spatial data analysis for developing a social economic engineering resiliency framework
 - Developing an energy service-based framework for community energy resilience
- Summer Research Associate (pro bono), Embassy of India, USA** 2021
- Preparing climate finance policy strategy and policy note for the economic division of Indian embassy to inform bilateral negotiations with the USA clean energy task force
- Research Assistant & Fellow, Keweenaw Energy Transition Lab, Great Lakes Research Center, USA** Summer 2020, Summer 2021
- Studying the techno-economic-social feasibility of a PUSH facility of participating in the Midcontinent Independent System Operator (MISO) market

- Researching the social acceptance of PUSH facility in the Upper Peninsula region of Michigan, United States
- Researching the spatial potential of re - developing underground mines into hydro storage facilities in the post mining communities in the United States

RESEARCH GRANTS

“Technical, Socioeconomic, and Environmental Frontiers of Offshore Wind: Research Conference and Summer School” submitted to National Science Foundation, PI Roman Sidortov, Shardul Tiwari, Co-PI, funding requested: \$98,870.	2023-2024 (expected)
“Innovative partnership Program ” Oak Ridge Associated Universities (ORAU). PI Shardul Tiwari, Chelsea Schelly, co-PI, Award funding \$ 4,000	2023
“Energy Service Security for Public Health Resilience in Michigan’s Western Upper Peninsula” Natural Hazard Center. PI Shardul Tiwari, Chelsea Schelly Co-PI, Total award Funding \$ 49,230	2022
Supported development of incubator grant proposal “Sustainable Transitions through Arctic Redevelopment (STAR)” under Navigating the New Arctic initiative of National Science foundation. PI - Dr Saleem Ali. Role: Researcher	2022-2023
“SAI: Socio-Technological Guided Enhancement of Power Infrastructure Resilience.” National Science Foundation, NSF-EAGER, PI – Chelsea Schelly. Total award funding: \$299,123 Role: Postdoctoral scholar	2021-2023
“Sustainable Redevelopment Education: Preparing Future Michigan Leaders in Climate, Justice, and Energy for Post-industrial Communities (SuRE).” Submitted to CIV:LAB. PI Shardul Tiwari Total funding requested \$ 87,141, (not funded)	2023-2024
“Mining, Energy, and Shipping in the Arctic (MESA): Assessing Human Dimensions, Trends, and National Security Implication” submitted to Minerva Research Initiative, Department of Defense. Under consideration in second round of review. Total funding requested \$4,999,755 Role: Research Scientist & Project Manager. Last round, (not funded)	2023-2028
“Legacy Infrastructure Codesign and Reuse Integrating Storage and Clean Energy project (LICO RISCE)” submitted to Partnership for International Research and Education (PIRE), National Science Foundation. Funding requested: \$ 1.5 million. (not funded) Role: Senior Personnel	2022
“SAI: The US Electrical Grid as a Complex Adaptive System: Integrative Modeling for Enhanced Infrastructural Resilience” submitted to National Science Foundation, NSF-EAGER. PI Chelsea Schelly, Shardul Tiwari, Co-PI funding requested: \$744,636.	2024-2025 (submitted)

PUBLICATIONS

Peer Reviewed Journals

Kuang, B., Schelly, C., Ou, G., Sahraei-Ardakani, M., **Tiwari, S.**, & Chen, J. (2023). Data-driven analysis of influential factors on residential energy end-use in the US. *Journal of Building Engineering*, 106947.

Lee, D., Schelly, C., Gagnon, V. S., Smith, S., & **Tiwari, S.** (2023). Preferences and perceived barriers to pursuing energy sovereignty and renewable energy: A tribal nations perspective. *Energy Research & Social Science*, 97, 102967. <https://doi.org/10.1016/j.erss.2023.102967>

Tiwari, S., Schelly, C., Ou, G., Sahraei-Ardakani, M., Chen, J., & Jafarishiadeh, F. (2022). Conceptualizing resilience: An energy services approach. *Energy Research & Social Science*, 94, 102878. <https://doi.org/10.1016/j.erss.2022.102878>

Tiwari, S. (2022). Texas electricity service crisis through an energy justice lens. *The Electricity Journal*, 35(9), 107204. <https://doi.org/10.1016/j.tej.2022.107204>

Pearce, J. M., **Tiwari, S.**, Pascaris, A. S., & Schelly, C. (2022). Canadian professors' views on establishing open source endowed professorships. *Cogent Education*, 9(1), 2122255. <https://doi.org/10.1080/2331186X.2022.2122255>

Tiwari, S., Schelly, C., & Sidortsov, R. (2021). Developing a legal framework for energy storage technologies in the US: The case of pumped underground storage hydro. *The Electricity Journal*, 34(10), 107048. <https://doi.org/10.1016/j.tej.2021.107048>

Whipple, S., **Tiwari, S.**, Osborne, T. C., Bowser, G., Green, S. A., Templer, P. H., & Ho, S. S. (2021). Engaging the Youth Environmental Alliance in Higher Education to Achieve the Sustainable Development Goals. *Scholarship and Practice of Undergraduate Research*, 5(1). <https://par.nsf.gov/biblio/10293208>

Manuscripts Submitted

Tiwari, S., Schelly, C. Child Malnutrition and Energy Service Access in India, in *The Capability Approach and Actualizing the Sustainable Development Goals: Inter/Multi/Trans Disciplinary Perspectives*. Oxford Publishing. (accepted: under editorial review)

Tiwari, S., Schelly, C. Energy Security in the Context of the Rural and Urban Divide: Disparities across Difference Shape the Lived Experience of Energy Services Security, in *The Routledge Handbook of Energy Security (2nd Edition)*. (accepted: under editorial review)

Tiwari, S., Schelly, C., & Sidortsov, R. Putting 'U' in PUSH: Comparing social acceptance of conventional and pumped underground storage hydro energy systems. Expected submission: *The Case Studies in Environment*. (Accepted: Under copy editing)

Manuscript in progress*

Tiwari, S., Sidortsov, R. Just Cost? PUSH and Reconceptualizing LCOS through Energy Justice. Expected submission: *Energy Research and Social Sciences*.

Tiwari, S., Lee, D., Sidortsov, R. Too many fingers in a pie: Legal and regulatory barriers to utilizing underground mines for pumped hydro storage. Expected submission, in *The Journal of Environmental Law*.

Tiwari, S., Schelly, C., Ou, G., Sahraei-Ardakani, M., Chen, J., & Jafarishiadeh, F. Situating power system resiliency into studying community energy resiliency through the lens of energy practitioners. Expected submission *Energy Policy*.

Scarlett, T., **Tiwari, S., Sidortsov, R.** Archives, Blueprints, Elders, and Museums: Industrial Archaeology's Tools for Assessing Potential and Feasibility of Decommissioned Infrastructure for PUSH. Expected submission: *Energy Research and Social Sciences*.

*At minimum, a first draft has been completed

Other Publications

Tiwari, S. (2022). Navigation by judgment: why and when top-down management of foreign aid doesn't work: by Dan Honig, New York, NY, Oxford University press, 2018, 263 pp., \$41.95 (hardcover), ISBN 9780190672454.

Sidortsov, R., **Tiwari, S.**, Scarlett, T., Dyreson, A., Watkins, D., Schelly, C. (2021). PUSHing for Storage: A Case for Repurposing Decommissioned Mines for Pumped Underground Storage Hydro (PUSH) in the United States, report to *SLOAN foundation*.

Tiwari, S. & Chaulagain, N. (2017). White Paper on Institutionalizing Energy Efficiency in Nepal. Nepal Energy Efficiency Programme, of GIZ and Ministry of Energy, Nepal.

Tiwari, S & Chaulagain, N. (2017). White Paper on Biomass Energy Strategy for Nepal. Nepal Energy Efficiency Programme, of GIZ and Ministry of Energy, Nepal

TEACHING EXPERIENCE

Adjunct Assistant Professor, Michigan Technological University, USA Spring 2023
Courses: SS 2300 Environment & Society; SS 3800 Energy Policy & Technology

Adjunct Instructor, Michigan Technological University, USA Fall 2022
Courses: SS2300 Environment & Society; SS 3800 Energy Policy & Technology

Graduate Teaching Assistant, Michigan Technological University, USA Fall 2019-Fall 2021
Courses: Global Issues, Environment & Society

Invited Lectures

- “Energy Justice and Energy Security in India”, University Polytechnic, Uttaranchal university, Dehradun, India Summer 2020
- “Environmental justice and law in India and the West”, Amity Law School, Amity University, Jaipur, India Summer 2020
- “Energy and Environmental Justice”, Bharati Vidyapeeth Deemed to be University, Pune, India Summer 2020
- “Environmental and Energy Justice”, ICFAI Law School, ICFAI University, Dehradun, India Summer 2020

PROFESSIONAL EXPERIENCE

Development Specialist, SYNC Energy (Remote work) 2023-present

- Developing projects & research grants to support development of artificial intelligence adoption for utilities.

State Team Lead, National Nutrition Mission, Tata Trusts, Patna, India 2018-2019

- Managed a team of 38 District fellows for nutrition mission in Bihar state, India
- Facilitated convergence amongst ten-line departments for implementation of national nutrition mission to reduce the prominence of underweight, stunting, wasting, and malnutrition in the state
- Officiated formation of State convergence action plan
- Spearheaded the Jan Andolan (community-based events) planning and implementation to reach over 6 million beneficiaries across the state.

Research Associate, Atal Bihari Vajpayee Institute of Good Governance and Policy Analysis, Bhopal, India 2017-2018

- Collaborated with district administration on projects to implement administration led education programs

- Monitored “Swayam” project for education quality improvement under the district education innovation scheme
- Conducted business process reengineering of schemes implemented by the Madhya Pradesh state government
- Assessed the implementation of district collectorate led programs of bringing internet access to Indigenous villages and making poultry farming as a livelihood creation project exclusively for Indigenous women

Regional Energy Policy Expert, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Kathmandu, Nepal 2016-2017

- Supported Ministry of Energy, Nepal, in energy strategy formulation for Nepal Energy Efficiency Programme (NEEP)
- Conducted a study on end use energy efficiency and demand side management interventions in Nepal
- Facilitated draft formulation for Sustainable Energy for All (SE4ALL) action agenda, Nepal: Energy Efficiency Section.
- Assisted in development of Biomass Energy Strategy (BEST) and Energy Efficiency Strategy (EEST), Nepal
- Drafted white paper on Institutionalizing energy efficiency in Nepal
- Administered development and implementation of live electricity display parameters for the Ministry of Energy building, Nepal

Energy Efficiency Consultant, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Kathmandu, Nepal 2015-2016

- Furnished analysis and strategic consulting service to the policy component of Nepal Energy Efficiency Programme
- Drafted terms of reference for several sub-projects and independent consultants
- Coordinated between GIZ and other bilateral and multilateral development organizations for post disaster needs assessment of Nuwakot, Rasuwa, and Dhading; three earthquake hit districts in Nepal

Engineer Operations, Sterlite Technologies Limited, Haridwar, India 2012-2013

- Computed and standardized key performance indicators for the manufacturing process
- Supervised dross segregation project under waste product management project
- Standardized process of enhancing aluminum rolling mill efficiency using molten aluminum flow to manage heat loss

FUNDING AWARDS

- Research Grant, Ecosystem Science Center, MTU, \$750 Summer & Fall 2022
- International Student Travel Award, International Association for Society and Natural Resources (IASNR) , \$1000 2022
- Travel and Research Grant, JUSTNORTH Project, European Commission, \$1200 2021
- Great Lakes research Centre Travel Grant, MTU, \$ 500 2021
- Graduate Students Scholarship, Department of Electrical Engineering, MTU, \$800 2021
- Graduate Student Government Research and Travel grant, MTU, \$250 2019, 2020, 2021, 2022
- Department of Social Sciences Graduate Research and Travel Award, MTU, \$500 2019, 2020, 2021, 2022
- Deutschland Stipendium, Scholarship of Academic performance, Brandenburg Technical University, € 1600 2014
- Great Lakes research Centre Research Grant, MTU, \$1500 2021

SELECTED ACHIVEMENTS

- Recipient of Outstanding Scholarship Award, Department of Social Sciences, Michigan Technological University (MTU) 2022
- Recipient of Outstanding Teaching Award, Department of Social Sciences, Michigan Technological University (MTU) 2021
- Featured in the top 10% of graduate instructor, MTU 2021
- Winner, Energy Trivia competition, Energy Policy Conference, Energy Policy Institute 2021
- Finalist of Three Minute Thesis competition (3MT), MTU 2020
- Consistently awarded best speaker and table topics awards winner, Himalaya Toastmasters Club, Kathmandu, Nepal Kathmandu, 2017-2018
- Consistently awarded best speaker and table topics awards winner, Patna Toastmasters Club, Patna, India 2018-2019
- Certificate of appreciation for organizing National Energy Auditor Training program, Kathmandu, Nepal 2016
- Commendation for organizing an international conference on energy efficiency, Kathmandu, Nepal 2015
- Star Performer Award for estimating aluminum percentage in dross for under Dross segregation project, Haridwar, India 2013
- Ranked amongst top 1 % among 240 students of graduating batch, Dehradun India 2012
- Certificate of Appreciation for securing second highest academic grade in Bachelor of Engineering 2009

SELECTED LECTURE AND PRESENTATION

- Presented on Advancing climate resilience in and through education, International Association of Society and Natural Resources (IASNR), Portland, Maine June 2023
- Panelist on Youth Environmental Alliance in Higher Education: Climate leadership across generation, COP 27, Sharm El-Sheikh, Egypt Nov 2022
- Presented on Understanding the Role of Sustainability in Higher Education, International Association of Society and Natural Resources (IASNR), San Jose, Costa Rica June 2022
- Organized Round Table on Sustainability Careers and Professional Discussion Round Table Event, Association of Students for People, Environments, and Nature, MTU April 2022
- Moderated events for Youth Environmental Alliance in Higher Education: Voices of Optimism: YEAH for Climate Action and the SDGs, COP 26, Glasgow November 2021
- Presented on Developing a Legal Framework for Energy Storage Technologies in the U.S., Energy Policy Conference, Boise State University October 2021
- Presented on feasibility of “Pumped Underground Hydro storage in upper Peninsula of Michigan, USA” at the 2nd Youth Environmental Alliance on Higher Education (YEAH) conference December 2020
- Presented on the Technological and Social Acceptance of PUSH in Upper Peninsula of Michigan, Community meeting, Negaunee, Michigan December 2020
- Presented on Energy Justice and Energy Security in India, University Polytechnic, Uttaranchal University, Dehradun, India August 2020
- Presented on Environmental justice and law in India and the West, Amity Law School, Amity University, Jaipur, India July 2020
- Presented on Energy and Environmental Justice, for the international conference on the perspective of global governance of environment in the pandemic era, New Law College, Bharati Vidyapeeth Deemed to be University, Pune, India July 2020
- Delivered a webinar on Environmental and Energy Justice, for Faculty Development Program, ICFAI Law School, ICFAI University, Dehradun, India June 2020
- Presented on the role of universities in promoting energy access, Sustainable Development Goal 7, COP 25, Madrid December 2019

- Guest presentation for the lecture of global issues on the topic of global energy and climate governance nexus September 2019
- Presented on Energy Efficiency in Nepal: Present and Future National Updates, German Embassy, Nepal June 2017
- Presented White paper on Development of Nepal Energy Information System, Ministry of Energy, Nepal February 2017
- Presented paper on Institutionalizing Energy Efficiency in Nepal: Learning from neighbors, Regional Conference on Energy Efficiency, Kathmandu November 2016
- Presented technical report on Demand Side Management in Nepal, National Electricity Utility, Kathmandu, Nepal October 2016

SELECTED WORKSHOPS/TRAININGS

- United Nations Annual Climate Change Conference (COP 26), Glasgow, Scotland November 2021
- Energy Policy Conference, Energy Policy Institute, Boise state University, Online October 2021
- Conference on “Reshaping norms in energy poverty: the capabilities approach in practice”, organized by Dr. Harriet Thomson, Human Development and Capabilities Association April 2021
- Synthesis workshop on “Renewable Energy Transition: A comparative assessment of the Hindu Kush Himalayas, Andes and Alps”, organized by Himalayan University Consortium (HUC), International Centre for Integrated Mountain Development (ICIMOD) April 2021
- Strengthening legal foundation for climate action compliance, Climate law and governance day, Universidad Autónoma de Madrid Faculty of Law, Madrid, Spain December 2021
- Six weeks development lecture series “Anubhav”, Harris School of Public Policy, India November 2018
- Workshop on National Nutrition Mission, Tata Trust, Delhi, India October 2018
- Workshop on Energy Efficiency and Sustainable Development Goals (SDGs), specifically SDG 7 November 2016
- Workshop on Institutionalizing Energy Efficiency in Nepal, Ministry of Energy, Nepal and GIZ September 2016
- Moderated and attended training of Energy Auditors by National Productivity Council, India, and Chamber of Commerce of Nepal, Kathmandu, Nepal February 2016
- Regional workshop on developing regional cooperation in energy, transmission and distribution April 2015
- Hope XXL summit, preparing a vision for future document to be presented at United Nations General Assembly, The Hague Netherlands May 2014

PROFESSIONAL SERVICE AND MEMBERSHIP

- Judge Presentation and Poster session at the Annual Graduate Research Colloquium, MTU 2023
- Reviewer, Energy Research & Social Sciences; Society & Natural Resources Journals Since 2022
- Member of Association of Students for People Environment, and Nature, student chapter of The International Association for Society and Natural Resources (IASNR) Since 2021
- Fellow, Himalayan University Consortium (HUC), International Centre for Integrated Mountain Development (ICIMOD) Since 2021
- Graduate student member, Great Lakes Research Centre, MTU Since 2021
- Member Rural Sociological Society Since 2021
- Fellow, Keweenaw Energy Transition Lab (KETL), MTU Since 2020
- Member of Association for Environmental Studies and Sciences 2020-2021
- Member Association of Public Policy Analysis and Management 2020
- President, Indian Student Association, MTU 2020-2021
- Member, International Student Council, MTU 2021
- Organizing committee member, World Water Day, MTU 2020
- Department Representative, Social Sciences, Graduate Student Government, MTU 2020

- Liaison to Undergraduate Student Government through Graduate Student Government, MTU 2020
- Member of Research Technical Assistance Centre (RTAC) network of United States Agency for International Development (USAID) Since 2019

NEWS AND MEDIA

- Featured in “Inclined to Innovate: Old Mines Inspire a New Energy Landscape”, 2023 Tech Magazine. <https://www.mtu.edu/magazine/2023/stories/mines-new-energy/> March 2023
- Featured in “Huskies Bring Research and Climate Action Experience to UN Summit.”, Michigan Tech News. <https://www.mtu.edu/news/2022/11/huskies-bring-research-and-climate-action-experience-to-un-summit.html> November 2022
- Presented on “Youth Environmental Alliance in Higher Education: Climate leadership across generation.” COP 27, Sharm El-Sheikh, Egypt. UN Climate Change – Events. <https://www.youtube.com/watch?v=DIc1nM6J0mA> November 2022
- Presented on “Youth Environmental Alliance in Higher Education : Voices of Optimism: YEAH for Climate Action and the SDGs.” COP 26, Glasgow, UK. <https://unfccc-videocloud.azurewebsites.net/videos/youth-environmental-alliance-higher-education-voices-optimism-yeah-climate-action-and-sdgs> November 2021
- Presented on “Catalyzing communities of future leaders: collaboration, research, and action for a better world.” UN Climate Change – Events. COP 26, Glasgow, UK. <https://www.youtube.com/watch?v=VLI0-9gtbp4> November 2021
- Delivered Press Conference on “Sustainable energy on our campus”. COP 25, Madrid, Spain. <https://vimeo.com/391053599> November 2019
- Moderated Press Conference on “Promoting gender equality in higher education: A case study.” COP 25, Madrid, Spain. <https://vimeo.com/388051688> December 2019
- Moderated Press Conference on “Infrastructure and innovation drive sustainability through higher education communities.” COP 25, Madrid, Spain. <https://vimeo.com/389514756> December 2019
- Featured in “Michigan Tech Students Participate in COP25.” Michigan Tech News. <https://www.mtu.edu/news/2019/12/michigan-tech-students-participate-in-cop25.html> December 2019