

Dr. Atul Kumar

Scientist B

ICWMR, TERI School of Advanced Studies, New Delhi, Vasant Kunj 110070

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SUMMARY

Sustainability scientist specialising in life cycle assessment (LCA), solid waste management, and climate impact assessment. Focuses on developing data-driven frameworks for environmental performance evaluation, with expertise in GHG accounting, carbon and water footprinting, and waste-to-energy systems.

KEY EXPERTISE

Life Cycle Assessment (LCA); Solid Waste Management and Circular Economy; GHG Accounting (Scope 1, 2 & 3); Carbon and Water Footprinting; Waste-to-Energy Systems; Environmental Modelling and Decision-Support Tools

PROFESSIONAL EXPERIENCE

1. Scientist B

ICWMR, TERI School of Advanced Studies, New Delhi | 2023–Present

- Leading research and consultancy in LCA, waste management, and climate impact assessment
- Developing footprinting methodologies and GHG accounting frameworks
- Delivering academic teaching and professional training programs

2. Postdoctoral Research Scientist

Rothamsted Research, United Kingdom | 2022–2023

- Worked on Defra-funded projects on the sustainability assessment of agri-food systems
- Conducted LCA of major food commodities in the UK

3. Earlier Roles

- Project Fellow, IIT (ISM) Dhanbad
- Graduate Engineer Trainee, Coca-Cola India

SELECTED PROJECTS

- GHG Mitigation from Decentralised Organic Waste Systems – Developed estimation toolkit (PI)
- PPP-based Municipal Solid Waste Management (MCD) – Monitoring and performance evaluation (PI)
- Legacy Waste Remediation (Kargil, Ladakh) – DPR vetting and advisory (PI)
- Impact-adjusted Water Footprint (Beverage Industry) – Baseline assessment
- CSR Impact Assessment (Plastic Recycling Systems) – Environmental impact evaluation

RESEARCH, TRAINING & OUTREACH

- Delivered courses on Solid Waste Management, LCA, and Circular Economy
- Lead trainer for Life Cycle Assessment programs (SkiLLS 1.0–4.0)
- Invited lectures at NEERI, XLRI, NIFT, IITs, and other institutions
- Organized international conference on sustainable waste supply chains and circular economy
- Mentored postgraduate and undergraduate research students

AWARDS & PROFESSIONAL ENGAGEMENT

- Recipient of the Defra (UK Government) funded Postdoctoral Fellowship
- Awarded the DST-SERB International Travel Grant for presenting research at an international conference
- Served as Guest Editor for a special issue on Municipal Solid Waste in the *Sustainability* journal (MDPI)
- Chair, WtERT-India, contributing to global collaboration on waste-to-energy and sustainable waste management initiatives
- Member, International Solid Waste Association (ISWA)
- Associate Member, Institution of Engineers (India)

PUBLICATIONS

Published in International Journals (SCI Indexed) ([Google Scholar Citations: 2444](#) till 30th Apr 2026) (**h-index: 10; i-10 index: 10**)

1. Cao, Y., Liu, L., Misselbrook, T., Smith, P., Ma, L., Zhao, H., Jin, X., Zhang, L., Wang, G., Ding, K., Wang, X., Wang, Y., Liu, J., Wang, H., Liu, Z., **Kumar, A.**, Guo, Y., Tian, C., Tan, Z. **(2026)**. Integrated bundled measures could halve reactive nitrogen losses and reach net-zero greenhouse gas emissions in global livestock systems. *Nature Food* (In Press, corrected proof). (**Impact Factor: 21.9**) [Quartile: Q1].
2. Aryan, Y., **Kumar, A.**, Vanjari, S., Dikshit, A.K., and Shinde, A.M. **(2025)**. Enhancing Sustainability in Municipal Solid Waste Management: An Integrated Approach to Assess Environmental Benefits and Opportunities in India. *Journal of Environmental Engineering*, 151 (10), 04025066. (**Impact Factor: 1.6**)
3. Jebari, A., Pereyra-Goday, F., **Kumar, A.**, Collins, A. L., Rivero, M. J., and McAuliffe, G. A. **(2024)**. Feasibility of mitigation measures for agricultural greenhouse gas emissions in the UK. A systematic review. *Agronomy for Sustainable Development*, 44(1), 2. (**Impact Factor: 6.7**)
4. Aryan, Y., **Kumar, A.**, and Samadder, S.R. **(2023)**. “Environmental and economic assessment of waste collection and transportation using LCA: A case study”. *Environmental Research*, 231, 116108. (**Impact Factor: 7.7**)
5. **Kumar, A.**, and Samadder, S.R. **(2023)**. “Development of lower heating value prediction models and estimation of energy recovery potential of municipal solid waste and RDF incineration”. *Energy*, 274, 127273. (**Impact Factor: 9.4**)

6. **Kumar, A.**, Bharadwaj, S., and Samadder, S.R. (2023). "Evaluation of methane generation rate and energy recovery potential of municipal solid waste using anaerobic digestion and landfilling: a case study of Dhanbad, India". *Waste Management & Research*, 41 (2), 407 – 417. **(Impact Factor: 4.3)**
7. McAuliffe, G.A., Takahashi, T., Lee, M.R.F., Jebari, A., Cardenas, L., **Kumar, A.**, Pereyra-Goday, F., Scalabrino, H. and Collins, A.L. (2023). "A commentary on key methodological developments related to nutritional life cycle assessment (nLCA) generated throughout a 6-year strategic scientific programme". *Food and Energy Security*, p.e480. **(Impact Factor: 4.5)**
8. **Kumar, A.**, and Samadder, S.R. (2022). "Assessment of energy recovery potential and analysis of environmental impacts of waste to energy options using life cycle assessment". *Journal of Cleaner Production*, 365, 132854. **(Impact Factor: 10)**
9. **Kumar, A.**, and Samadder, S.R. (2020). "Performance evaluation of anaerobic digestion technology for energy recovery from organic fraction of municipal solid waste: A review". *Energy*, 197, 117253. **(Impact Factor: 9.4)**.
10. **Kumar, A.**, Samadder, S.R., Kumar, N., and Singh, C. (2018). "Estimation of the generation rate of different types of plastic wastes and possible revenue recovery from informal recycling". *Waste Management*, 79, 781-790. **(Impact Factor: 7.1)**
11. Khan, D., **Kumar, A.**, and Samadder, S.R. (2018). "Public Acceptance Study of Environmentally Suitable Landfill Sites: A Case Study". *Current Science*, 115 (11), 2122-2129. **(Impact Factor: 1.0)**
12. **Kumar, A.** and Samadder, S.R. (2017). "An empirical model for prediction of household solid waste generation rate- A case study of Dhanbad, India". *Waste Management*, 68, 3-15. **(Impact Factor: 7.1)**
13. **Kumar, A.**, and Samadder, S.R. (2017). "A review on technological options of waste to energy for effective management of municipal solid waste". *Waste Management*, 69, 407-422. **(Impact Factor: 7.1)**
14. Khan, D., **Kumar, A.** and Samadder, S.R. (2016). "Impact of socioeconomic status on municipal solid waste generation rate". *Waste Management*, 49, 15-25. **(Impact Factor: 7.1)**

International Conference:

1. **Kumar, A.**, and Samadder, S.R. (2019). "Effect of Cow Dung Inoculum on Biogas Generation from Anaerobic Digestion of Organic Fraction of Municipal Solid Waste – A Case Study of India" June 26-29, 2019. International Conference on Sustainable Solid Waste Management, Heraklion, Crete Island, **Greece**.
2. **Kumar, A.**, and Samadder, S.R. (2016). "Do socioeconomic parameters govern the generation rate and characteristics of municipal solid waste?" April 1 – 2, 2016.

International Conference on Waste Management (RECYCLE 16), Indian Institute of Technology, Guwahati, **India**.

National Conference:

1. **Kumar, A., Kumar, N., & Samadder, S.R. (2016)**. “Assessment of status of municipal solid waste management in Dhanbad city” December 17 – 18, 2016. National Seminar on Environment and Development in Eastern India (Status, Issues and Challenges). Ranchi University, Ranchi, Jharkhand, India.
2. **Kumar, A., & Samadder, S.R. (2018)**. “Municipal solid waste generation and composition based on family socioeconomic profile: a case study of Dhanbad” August 11-12, 2018. National Conference on Biogeochemical Cycles and Climate Change. Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand, India.

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