Dr. Srinivasan Balachandran
Associate Professor
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Academic Qualification

- B.Sc. (Botany): St. Joseph's College, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India, 1991
- M.Sc. (Environmental Sciences): Jawaharlal Nehru University, New Delhi, India, 1993
- M.Phil. (Environmental Sciences): Jawaharlal Nehru University, New Delhi, India, 1996. Title: "Influence of atmospheric pollutants on wet deposition in Delhi". Supervisor: Prof. P.S. Khillare
- Ph.D. (Environmental Sciences): Jawaharlal Nehru University, New Delhi, India, 2002. Title: "Profiles of Respirable and Non-Respirable particulate Polycyclic Aromatic Hydrocarbons in the vehicular exhaust and urban atmosphere of Delhi". Supervisor: Prof. P.S. Khillare

Professional Career

Associate Professor (2015 – to till date)
Department for Environmental Studies, Siksha-Bhavana, Visva-Bharati, Santiniketan, West Bengal, India. Teaching Environmental Chemistry, Environmental Analytical techniques, Water pollution, Soil Science, Soil pollution and solid waste management, Environmental Toxicology, Biodiversity and conservation for M.Sc. I and II year

Assistant Professor: (2004 – 2015)
Department for Environmental Studies, Siksha-Bhavana, Visva-Bharati, Santiniketan, West Bengal, India. Teaching Environmental Chemistry, Environmental Analytical techniques, Water pollution, Soil Science, Soil pollution and solid waste management, Environmental Toxicology, Biodiversity and conservation for M.Sc. I and II year

Research Associate:2003-2004.
School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, 110067, INDIA. Worked as a Post-Doctoral Fellow awarded by the Council of Scientific and Industrial Research (CSIR), Govt. of India (**Research Associate**). Title: Profile of Polycyclic Aromatic Hydrocarbons in soils and atmospheric dust of Delhi.Project Investigator: Prof. PS Khillare

Extended-Senior Research Fellow: 2002-2003.
School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, 110067, INDIA. Worked as an Extended-Senior Research Fellow awarded by the Council of Scientific and Industrial Research (CSIR), Govt. of India (Extended-Senior Research Fellow). Title: Profile of Polycyclic Aromatic Hydrocarbons in Urban street dust and their source materials in Delhi. Project Investigator: Prof. PS Khillare

Area of Interest:

- Persistent Organic Pollutants; Polycyclic aromatic hydrocarbons and their degradation;
- Soil pollution; bioremediation by vermicomposting;
- Chemical speciation and bioavailability of potentially toxic elements;
- Physical, chemical, and biological pre-treatment for enhancing Biogas;
- Renewable energy and rural upliftment

List of recent publications:

1. S**. Balachandran**, Bharat Raj Meena and P. S. Khillare **(2000)** Particle size distribution and its elemental composition in the ambient air of Delhi, *Environment International*, 26, 49-54 (Impact 11.8, 2023)
2. **S. Balachandran** and P. S. Khillare **(2001)** Occurrence of acid rain over Delhi, *Environmental Monitoring and Assessment* **71:** 165–176, 2001. (IF 3, 2023)

3. P. S. Khillare., Rajni Pandey and **S. Balachandran** (2004) Characterisation of Indoor PM_{10} in Residential Areas of Delhi, *Indoor Built Environ* 2004;13:139–147 (IF 3.6, 2023)
4. P. S. Khillare, **S. Balachandran** and Bharat Raj Meena **(2004)** Spatial and temporal variation of heavy metals in atmospheric aerosol of Delhi**,** *Environmental Monitoring and Assessment* **90:** 1–21, 2004 (IF 3, 2023)
5. P. S. Khillare, **S. Balachandran** and Raza Rafiqul Hoque, (2005) Profile of PAHs in the diesel vehicle exhaust in Delhi, *Environmental Monitoring and Assessment* (2005) **105:** 411–417 (IF 3, 2023)
6. P. S. Khillare, **S. Balachandran** and Raza Rafiqul Hoque, (2005) Profile of PAH in the exhaust of gasoline driven Vehicles in Delhi**,** *Environmental Monitoring and Assessment* (2005) **110:** 217–225 (IF 3, 2023)
7. P.S. Khillare, Raza Rafiqul Hoque, Vijay Shridhar, Tripti Agarwal, **S. Balachandran** (2008) Temporal variability of benzene concentration in the ambient air of Delhi: A comparative assessment of pre- and post-CNG periods, *Journal of Hazardous Materials* 154 (2008) 1013–1018 (IF 13.6, 2023) https://doi.org/10.1016/j.jhazmat.2007.11.006
8. R.R.Hoque, P.S. Khillare, T. Agarwal, V. Shridhar, **S. Balachandran** (2008) Spatial and temporal variation of BTEX in the urban atmosphere of Delhi, India, *Science of the Total Environment*, 392 , 30 – 40 (IF 9.8, 2023)
9. M. Senthil Kumar, Shibani Chaudhury and **S. Balachandran** ***(2009)*** *In Vitro* Micropropagation of *Oxystelma esculentum* R. Br. – A Medicinal Herb., *International Journal of Biotechnology and Biochemistry*, Volume 5 Number 2 (2009) pp. 147–156
10. Sulata Maity, **S. Balachandran**, Shibani Chaudhury, (2010). Interdependency of Macrophytes and avian diversity in the wetlands of Ballavpur Wildlife Sanctuary, Santiniketan. *Science & Culture* 76 (5-6), 180-184
11. Muthusamy Senthil Kumar, **Srinivasan Balachandran** and Shibani Chaudhury - Influence of Incubation Temperatures on Total Phenolic, Flavonoids Content and Free Radical Scavenging Activity of Callus from *Heliotropium indicum* L. *Asian J. Pharm. Res.* 2012; Vol. 2: Issue 4, Pg 148-152
12. Debopriya Bhattacharyya, **S. Balachandran** & Shibani Chaudhury (2014): Chemical speciation and mobility of some trace elements in vermicomposted fly ash, *Soil and Sediment Contamination: An International Journal*, 23:8, 917-931 (IF 2, 2023) https://doi.org/10.1080/15320383.2014.892915
13. Muthusamy Senthil Kumar, **Srinivasan Balachandran** and Shibani Chaudhury (2014) In Vitro Callus Culture of *Heliotropium indicum* Linn. for Assessment of Total Phenolic and Flavonoid Content and Antioxidant Activity, *Appl Biochem Biotechnol* (2014) 174:2897–2909
14. Mathew, A. K., Bhui, I., Banerjee, S. N., Goswami, R., Chakraborty, A. K., Shome, A., Chakraborty. A.K., **Balachandran, S**., Chaudhury, S. (2015). Biogas production from locally available aquatic weeds of Santiniketan through anaerobic digestion. *Clean Technologies and Environmental Policy*, *17*(6), 1681-1688. (IF 4.3, 2023)
15. Hussain K, **Balachandran S**., Hoque RR (2015) Sources of polycyclic aromatic hydrocarbons in sediments of the Bharalu River, a tributary of the River Brahmaputra in Guwahati, India, *Ecotoxicology and Environmental Safety* 122 (2015) 61–67 (IF 6.8, 2023)
16. Manash Gope, Raza Rafiqul Hoque, and **S. Balachandran** (2015) Chemical Speciation Of Zn In Roadside Deposited Dust Of Asansol, West Bengal, India , International Journal Of Bio-Resource, Environment And Agricultural Sciences (IJBEAS) , Vol. 1(4) :192-198, 2015
17. Basu, M., Mayana, K., Xavier, S., **Balachandran, S**., & Mishra, N. (2016). Effect of scopoletin on monoamine oxidases and brain amines. *Neurochemistry International*, *93*, 113-117. (IF 4.2, 2023)
18. Laha, T., Gope, M., Masto, R. E., Datta, S., & **Balachandran, S.** (2016). Assessment of some PTEs (Co, Fe, and Mn) and their bioavailability in playground soils Khagra, West Bengal, India. *International Journal Of Bio-Resource, Environment And Agricultural Sciences* (IJBEAS) Vol. 2(3) :345-358, 2016

19. Laha, T., Gope, M., Masto, R. E., Datta, S., & **Balachandran, S.** (2016). Influence of bell-metal industry on the concentration and speciation of lead (Pb) in the playground soil of Khagra, West Bengal. *Int. J. Bio-res. Env. Agril. Sci*., Vol. 2(3) :333-344, 2016
20. Goswami R, Mukherjee S, Chakraborty AK, **Balachandran** S, Sinha Babu SP, Chaudhury S, Optimization of growth determinants of a potent cellulolytic bacterium isolated from lignocellulosic biomass for enhancing biogas production, Clean Techn Environ Policy (2016) 18: 1565-83. https://doi.org/10.1007/s10098-016-1141-z (IF 4.3, 2023)
21. Manash Gope, Reginald Ebhin Masto, Joshy George, Raza Rafiqul Hoque, **Srinivasan Balachandran** (2017) Bioavailability and health risk of some potentially toxic elements (Cd, Cu, Pb and Zn) in street dust of Asansol, India, *Ecotoxicology and Environmental Safety* 138, 231–241. (IF 6.8, 2023)
22. Bhui, I., Mathew, A. K., Chaudhury, S., & **Balachandran, S.** (2018). Influence of volatile fatty acids in different inoculum to substrate ratio and enhancement of biogas production using water hyacinth and salvinia. *Bioresource technology*, *270*, 409-415. (IF 11.4, 2023)
23. Pranamika Bhuyan, Pratibha Deka, Amit Prakash, **S. Balacha**ndran, Raza Rafiqul Hoque (2018) Chemical characterization and source apportionment of aerosol over mid Brahmaputra Valley, India, *Environmental Pollution* 234 (2018) 997-1010 (IF 8.9, 2023)
24. Manash Gope, Reginald Masto, Joshy George, **S. Balachandran**(2018) Exposure and cancer risk assessment of polycyclic aromatic hydrocarbons (PAHs) in the street dust of Asansol city, India, *Sustainable Cities and Society,* 38, 616-626 (IF11.7, 2023)
25. Gope, M., Masto, R. E., George, J., & **Balachandran, S**. (2018). Tracing source, distribution and health risk of potentially harmful elements (PHEs) in street dust of Durgapur, India. *Ecotoxicology and Environmental Safety*, *154*, 280-293. (IF 6.8, 2023)
26. Kumar P, Ranjan M.R, Tripathi A, Balachandran S. Srivastava P (2018) Heavy metal pollution assessment around Kota Super Thermal power plant, Poll Res. 37 (3) : 145-153
27. Kumar P, Ranjan M.R, Tripathi A, Srivastava P and Balachandran S. (2018) Assessment of the level and impact of selected physiochemical parameters of kota super thermal power plant's effluent on Chambal river, kota, rajasthan india , International Journal of Current Advanced Research, Volume 7; Issue 1(E) 9021-9024; DOI: http://dx.doi.org/10.24327/ijcar.2018.9024.1475
28. Gope, M., Masto, R.E., Basu, A., Bhattacharyya, D., Saha, R., Hoque, R.R., Khillare, P.S., **Balachandran, S**. (2020), Elucidating the distribution and sources of street dust bound PAHs in Durgapur, India: a probabilistic health risk assessment study by Monte-Carlo simulation, Environmental Pollution, https://doi.org/10.1016/j.envpol.2020.115669 (IF 8.9, 2023)
29. Laha, T., Gope, M., Datta, S., Masto, R.E., **Balachandran, S**. (2020) Oral bioaccessibility of potentially toxic elements (PTEs) and related health risk in urban playground soil from a medieval bell metal industrial town Khagra, India, *Environ Geochem Health* (2020) **45**, 5619–5637 (2023). https://doi.org/10.1007/s10653-020-00715-y (IF 4.2, 2023)
30. Kumar P, Manju Rawat Ranjan MR., Ashutosh Tripathi A. and **S. Balachandran S (2020)** Assessment of bioassay test of the effluent and impact of selected physiochemical parameters of kota super thermal power plant's effluent on Kota barrage lake water, Kota Rajasthan India. *Plant Archives* Vol. 20 Supplement 1, 2020 pp. 983-987 e-ISSN:2581-6063 (online), ISSN:0972-5210
31. Pal, M., Gope M., Basu A., Laha T., Masto R. E., Labar R., Kundu T. K., Hoque R. R., Khillare P. S., and **Balachandran S**..(2021) "Indoor Quality of Residential Homes and Schools of an Industrial Area in Asansol: Characterization, Bioaccessibility and Health Risk Assessment of Potentially Toxic Elements." *Nature Environment and Pollution Technology* 20, no. 1 (2021): 13-28. (**https://doi.org/10.46488/NEPT.2021.v20i01.002)riginal Research Paper**
32. Basu, A., Hazra, A. K., Chaudhury, S., Ross, A. B., & **Balachandran, S.** (2021, June). State of the Art Research on Sustainable Use of Water Hyacinth: A Bibliometric and Text Mining Analysis. In *Informatics* (Vol. 8, No. 2, p. 38). Multidisciplinary Digital Publishing Institute. https://doi.org/10.3390/informatics8020038 (IF 3.1, 2023)

33. Sinha, D., Banerjee, S., Mandal, S., Basu A., Banerjee, A., **Balachandran, S.,** Mandal, N.C., and Chaudhury S (2021). "Enhanced biogas production from Lantana camara via bioaugmentation of cellulolytic bacteria." *Bioresource Technology* (2021): 125652. https://doi.org/10.1016/j.biortech.2021.125652, (IF 11.4, 2023)
34. Pal, S., S. Maity, **S. Balachandran**, and S. Chaudhury (2021). "In-vitro Effects of Chlorpyrifos and Monocrotophos on the Activity of Acetylcholinesterase (AChE) in Different Tissues of Apple Snail Pila globosa (Swainson, 1822)." *Nature Environment & Pollution Technology* 20, no. 3 , 1263-1268
35. Gogoi, D., Sazid, A., Bora, J., Deka, P., **Balachandran, S**., & Hoque, R. R. (2021). Particulate matter exposure in biomass-burning homes of different communities of Brahmaputra Valley. *Environmental monitoring and assessment*, *193*(12), 1-17. (IF 3, 2023)
36. Show, B. K., Banerjee, S., Banerjee, A., GhoshThakur, R., Hazra, A. K., Mandal, N. C., Ross, A.B., **Balachandran, S**. & Chaudhury, S. (2022). Insect gut bacteria: a promising tool for enhanced biogas production. *Reviews in Environmental Science and Bio/Technology*, 21, 1 -25. (IF 14.4, 2023)
37. Pal, S., Basu, A., Thakur, R. G., **Balachandran, S**., & Chaudhury, S. (2022). Consumption of Pila globosa (Swainson) collected from organophosphate applied paddy fields: human health risks. *Environmental Science and Pollution Research*, 29, 1-14. (IF 5.8, 2023)
38. Deka, P., Medhi, C., Bhuyan, P., Gope, M., **Balachandran, S**., & Hoque, R. R. (2022). Understanding exposure risks of women and children to PAHs in biomass using households of Brahmaputra valley. *Journal of Air Pollution and Health*, *7*(1), 33-50.
39. GhoshThakur, R., Basu, A., Haque, Z., Bhattacharya, B., GonChaudhuri, S., & **Balachandran, S**. (2022). Performance prediction of the Micro Solar Dome in different climatic regions of India from pilot-scale by Random Forest algorithm. *Sustainable Energy Technologies and Assessments*, *52*, 102163. (IF 8, 2023)
40. Bagdi T, Ghosh S, Sarkar A, Hazra AK, **Balachandran S,** Chaudhury S, (2022) Whose Development Counts? Adoption of Biogas in the Rural Communities of India- A Review , *International Journal of Renewable Energy* Research, 12, (4), 2023-2042
41. Laha T., **Balachandran S**. and Masto R.E. (2023). Spatial and temporal variation of in-vitro Bioaccessibility of chromium in playground soils of ancient bell metal industrial town, Khagra, West Bengal. *International Journal of Biological Innovations*. 5(1): 132-142. https://doi.org/10.46505/IJBI.2023.5111
42. Bagdi T, Ghosh S, Sarkar A, Hazra, A.K., Balachandran S., Chaudhury S. (2023) Evaluation of research progress and trends on gender and renewable energy: A bibliometric analysis, Journal of Cleaner Production, Volume 423, 15 October 2023, 138654 (IF 11.1, 2023) https://doi.org/10.1016/j.jclepro.2023.138654
43. Show B.K., Panja S, GhoshThakur R , Basu A, Koley A., Ghosh A., Pramanik K., Chaudhury S., Hazra A.K., Dey N., Ross A.B. and Balachandran S (2023) Optimisation of Anaerobic Digestate and Chemical Fertiliser Application to Enhance Rice Yield—A Machine-Learning Approach, Sustainability 2023, 15, 13706. https://doi.org/10.3390/su151813706
44. GhoshThakur R, Balachandran S, and GonChaudhuri S (2023) Analysis of multimodal performance of a hybrid solar pumped storage system for enhanced energy security in rural areas, International Journal of Green Energy. Volume 307, 118375 https://doi.org/10.1016/j.enconman.2024.118375 (Date of acceptance 22nd September 2023) (IF 3.3, 2022)
45. Koley, A, Mukhopadhyay, P., Gupta, N., Singh, A., Ghosh, A., Show, B.K., GhoshThakur, R., Chaudhury, S., Hazra, A.K., Balachandran S. (2023), Biogas production potential of aquatic weeds as the next-generation feedstock for bioenergy production: a review, *Environ Sci Pollut Res* (2023) 30, pages 111802–111832. https://doi.org/10.1007/s11356-023-30191-7, Published16 October 2023
46. Show B.K., Shivakumaran G., Koley A., Ghosh A., Chaudhury S.,· Hazra A.K., Balachandran S. (2023) Effect of thermal and NaOH pre-treatment on water hyacinth to enhance the biogas production, *Environ Sci Pollut Res* (2023). 30, 120984–120993 https://doi.org/10.1007/s11356-023-30810-3, Published10 November 2023

47. Banerjee, Sandipan, Nitu Gupta, Krishnendu Pramanik, Manash Gope, Richik GhoshThakur, Animesh Karmakar, Nayanmoni Gogoi, Raza Rafiqul Hoque, Narayan Chandra Mandal, and Srinivasan Balachandran "Microbes and microbial strategies in carcinogenic polycyclic aromatic hydrocarbons remediation: a systematic review." *Environmental Science and Pollution Research* 31, no. 2 (2024): 1811-1840. https://doi.org/10.1007/s11356-023-31140-0
48. GhoshThakur R, Ghosh A., Ruchi R.D., GonChaudhuri S and Balachandran S (2024) Green Inertia and Reliable Power: Fortifying Edge-to-Grid Connectivity with Micro Variable Speed Solar Pumped Storage. Energy Conversion and Management, 307 (2024) 118375. https://doi.org/10.1016/j.enconman.2024.118375
49. Show, Binoy Kumar, Andrew B. Ross, Raju Biswas, Shibani Chaudhury, and Srinivasan Balachandran. "Draft genome sequence data on Bacillus safensis U41 isolated from soils of Santiniketan, India." *Data in Brief* (2024): 54: 110547. https://doi.org/10.1016/j.dib.2024.110547
50. Koley, Apurba., GhoshThakur, Richik., Das, Kausik., Gupta, Nitu., Banerjee, Aishiki., Show, Binoy Kumar., Ghosh, Anudeb., Chaudhury, Shibani., Hazra, Amit Kumar., Nahar, G., Andrew B. Ross and Srinivasan Balachandran. Growth Dynamics and Nutrient Removal from Biogas Slurry Using Water Hyacinth. Sustainability 2024, 16, 4450. https://doi.org/10.3390/su16114450
51. Show, Binoy Kumar, Andrew B. Ross, Raju Biswas, Shibani Chaudhury, and Srinivasan Balachandran (2024) Whole genome sequence data of a lignocellulose-degrading bacterium, *Arthrobacter koreensis* BSB isolated from the soils of Santiniketan, India, Data in Brief, 57: 110915, https://doi.org/10.1016/j.dib.2024.110915
52. Laha, T., Gupta, N., Pal, M. Koley,A., Masto, R.E., Hoque, R.R., and Balachandran S (2024) Chemical speciation and health risk assessment of potentially toxic elements in playground soil of bell metal commercial town of Eastern India. *Environ Geochem Health* **46**, 453 (2024). https://doi.org/10.1007/s10653-024-02240-8
53. Mondal N.K., Mondal B., Koley R., Koley A., Balachandran S. (2024) Efficacy of two different forms of selenium towards reduction of arsenic toxicity and accumulation in Cicer arietinum L., Journal of Trace Elements in Medicine and Biology, 86, 127541, https://doi.org/10.1016/j.jtemb.2024.127541
54. Gupta N., Banerjee S., Koley A., Bharali P., GhoshThakur R., Hoque RR., Balachandran S. (2024) Strategies for remediation of polycyclic aromatic hydrocarbons in contaminated soil: A systematic review and bibliometric analysis, Applied soil Ecology, Volume 204, December 2024, 105688, https://doi.org/10.1016/j.apsoil.2024.105688
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56. Nahar, G.; Koley, A.; Garai, S.; Balachandran, S.; Ross, A.B. Enhancing Biogas Production Through the Co-Digestion of Fish Waste (FW) and Water Hyacinth (WH) Using Cow Dung as an Inoculum: Effect of FW/WH Ratio. *Appl. Sci.* **2024**, *14* (21), 9880 **https://doi.org/10.3390/app14219880**
57. Ramesh K, Koley A, Das N, Patchaiyappan A, Bagdi T, Balachandran S (2024) Traditional Dual Tank Water Management: A Study of Kolakanatham in Perambalur District, Tamil Nadu, Curr World Environ 2024; 19, No. (**3**) Pg. 1526-1546
58. M Pal, M Gope, A Koley, A Basu, S Kumar, RE Masto, Labar R., Kundu TK, Hoque R R, Balachandran S (2025)- Bioaccessibility and risk assessment of potentially toxic elements in indoor dust of an industrial city in Eastern India, Environmental Pollution and Management, Volume 2, December 2025, Pages 63-76. https://doi.org/10.1016/j.epm.2025.02.001
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systems – a comprehensive review. Toxicological & Environmental Chemistry, 107(6), 1114–1171. https://doi.org/10.1080/02772248.2025.2515403

60. Bharali, P., Gupta, N., Agarwal, T., Balachandran, S., & Hoque, R. R. (2025). Polycyclic Aromatic Hydrocarbons (PAHs) in park and playground soils: A comparative health risk assessment in two South Asian cities of Brahmaputra Valley, India. *Environmental Pollution*, 328, 126699. https://doi.org/10.1016/j.envpol.2025.126699
61. Show, Binoy Kumar, Subhrangshu Mandal, Aman Basu, Shibani Chaudhury, Amit Kumar Hazra, Andrew B. Ross, Jagannath Sarkar, and Srinivasan Balachandran. "Optimization of Inoculum-Substrate Ratio and Metagenomic Landscape of Biogas-Generating-Microbiome for Sustainable Bio-methane Production." *Waste and Biomass Valorization* (2025): 1-14. https://doi.org/10.1007/s12649-025-03191-6
62. Anupama Balagopal, Anushka Alva, Harsha K Chandrasekhar, Sachin Ashok Thorat, Arya Kaniyassery, Apurba Koley, Srinivasan Balachandran, Nisha Govender & Annamalai Muthusamy (2025) The fate of heavy metals and metalloids in plant systems – a comprehensive review, Toxicological & Environmental Chemistry, 107:6, 1114-1171, DOI: 10.1080/02772248.2025.2515403
63. Bagdi, T., Koley, A., Das, N., Das, S., Gayen, S., Sarkar, A., Ghosh, S., Kumar, S., Chaudhury, S., Hazra, A. K., Ross, A. B., Chakraborty, D., Balachandran, S., 2025. Health risk assessment among biogas and conventional cooking fuel users in different socioeconomic conditions of rural West Bengal. *Nature Environment and Pollution Technology*, 24(4), p.B4295. https://doi.org/10.46488/NEPT.2025.v24i04.B4295
64. Kumari, P., Balachandran, S. & Hoque, R.R. Study of exposure to Particulate Matter during daily commuting – understanding from Tezpur city of mid-Brahmaputra Valley, India. *Environ Monit Assess* **197**, 932 (2025). https://doi.org/10.1007/s10661-025-14403-w
65. Ghosh, A., Maji, D., Roy, S., Pal, S., Basu, A., GhoshThakur, R., & Balachandran, S. (2025). Forecasting Organic Waste and Biomethane Generation Potential of a non industrial district of Eastern India: A Data-Driven Approach to Sustainable Energy and Waste Management. *Cleaner Waste Systems*, 100378. https://doi.org/10.1016/j.clwas.2025.100378

Books and Chapters:

1. Shibani Chaudhury, Amit Kumar Hazra and Srinivasan Balachandran (2016) Green Energy and Sustainable Environment, Aksahar Prakashini Publication, Bolpur. ISBN: 978-81-922916-6-6
2. Debashree Sinha, Ramansu Goswami, Indranil Bhui, Amit K Chakraborty, Sambu Nath Banerjee, S. Balachandran, Shibani Chaudhury (2016) Isolation and characterization of cellulolytic fungi from active anaerobic digesters In book Ed by Shibani Chaudhury, Amit Kumar Hazra and Srinivasan Balachandran (2016) Green Energy and Sustainable Environment, Aksahar Prakashini Publication, Bolpur. ISBN: 978-81-922916-6-6, PP- 28-35
3. S. Balachandran and Shibani Chaudhury (2017) Indian Energy Scenarios (Prospects and Constraints), in" India's Development Juggernaut, Ed. Naresh Chaturvedi, Sahitya Sangam, Allahabad pp: 342-362 (ISBN: 978-81-88494-97-2)
4. Mishra N., Basu M., Balachandran S., Savarimuthu X., Basu A. (2017) Enzymatic targets for drug discovery against Alzheimer disease, Ed. Satya P Gupta, In advances in studies on enzyme inhibition of drugs, vol 2, Nova Science publication ISBN 978-1-53610-505-6
5. Hussain K., Hoque R.R., Balachandran S., Medhi S., Idris M.G, Rahman M., Hussain F.L. (2018) Monitoring and Risk Analysis of PAHs in the Environment, C. M. Hussain (ed.), Handbook of Environmental Materials Management, Springer International Publishing AG 2018, https://doi.org/10.1007/978-3-319-58538-3_29-1
6. Banerjee A., Show B.K., Chaudhury S., and Balachandran S. (2022) Biological pre-treatment for enhancement of biogas production, In Cost Effective Technologies For Solid Waste And Wastewater Treatment, Eds Kathi S, Devipriya S. and Thamaraiselvi K, Elsevier publications
7. Basu A., Laha A., Bhui I, Biswas A., Sarkar K., Chaudhury S. and Balachandran S. (2022)

Biogas potential of Kitchen waste at Visva-Bharati, Santiniketan, In Biomethane through Resource Circularity: Research, Technology and Practices edited by Sadhan Kumar Ghosh, Michael Nelles, H.N. Chanakya, Debendra Chandra Barua, CRC Press

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10. Koley A., Bray D., Banerjee S., Sarkar S., GhoshThakur R., Hazra A.K., Mandal N.C., Chaudhury S., Ross A.B., Camargo-Valero M.A., Balachandran S. (2023) Water Hyacinth (*Eichhornia crassipes*) A Sustainable Strategy for Heavy Metals Removal from Contaminated Waterbodies, In Bioremediation of Toxic Metal (loid) s edited by Anju Mallick, Mohd. Kashif Kidwai Vinod Kumar Garg, CRC Press.
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20. Apurba Koley, Nitu Gupta, Ananya Singh, Richik GhoshThakur, and Srinivasan Balachandran (2024) Microalgae-Based Biofuel for Sustainable Bioenergy Production, Chapter 14, In in Application of Microbial Technology in Wastewater Treatment and Bioenergy Recovery Edited by Shaon Ray Chaudhuri, ISSN 2662-6861, Published by Springer
21. Sinha Roy, C, Koley, A and Balachandran S (2024) Polycyclic Aromatic Hydrocarbons In Street Dust Of Different Cities In India A Review, In the Perspective Of Environmental Management And Education Edited by Savita Mishra Deep Chakraborty Naba Kumar Mondal Kuldip Dwivedi, Mittal Publications, New Delhi (India)
22. Gupta N, Koley K, Banerjee S, Show B.K., Ghosh A, Banerjee S, Hoque R.R, Balachandran S (2025) Microbial Strategies of Chrysene Remediation in the Challenges and Sustainable Solutions in Bioremediation edited by Kashyap Kumar Dubey, Maulin P. Shah, Ankush Yadav, ISBN- 9781003407317, CRC Press

List of PhD scholars

1. Influence of abiotic stress on callus culture of *Heliotropium indicum* L for assessment of flavonoids and phenolic contents – M. Senthil Kumar – awarded (2013)
2. Risk assessment of potentially toxic elements and Polycyclic aromatic hydrocarbons in the street dust (<53µM) of Asansol and Durgapur, West Bengal, India- Manash Gope- Awarded. (2017)
3. Mobility and bioavailability of potentially toxic elements (PTEs) in playground soils of Khagra, Murshidabad district, West Bengal – Tanmay Laha- awarded (2018)
4. Modulating neurotoxic effects of Chlorpyrifos by a naturally occurring Coumarin Scopoletin- Mahua Basu- awarded (2018)
5. Enhancing biogas production by co-digestion – Indranil Bhui – awarded (2018)
6. Potential Toxic Elements in Indoor Dust of Durgapur and Asansol Industrial Area and Associated Health Risk Assessment – Mousumi Pal - awarded (2020)
7. A Comparative study of performance and environmental impact of Puruliya Pumped storage scheme, West Bengal and Hengbung, Solar {Pumped Storage Scheme, Manipur – Richik Ghosh Thakur (2025)

List of completed Projects

1) Principal Investigator
Name of the project: "A Comparative ethnobotanical investigation: The Santal tribes of major populated districts in West Bengal, India" (Jan 2010 to Jan 2013)
Sponsoring agency: UGC. (extended for six months and submitted in July 2013)

2) Co-Principal Investigator
Name of the Project: **Development and Integration of Biomass and Concentrating Photovoltaic System for the Rural and the Urban Energy Bridge: BioCPV.**

A research project under the Indo-UK Collaborative Research Initiative on *Bridging the Urban and the Rural Divide (BURD).*

Sponsoring agency: DST, New Delhi (2012-2015) extended upto 2017
[DST/SEED/INDO-UK/002/2011/VBU dated 20th June 2012]

The total cost of the project is **INR 5, 57, 17, 125/-** of which the amount sanctioned to Visva-Bharati is **INR 2, 26, 70, 325/-**

Collaboration with Prof. Tapas Mallik (University of Exeter, UK), Prof. Gavin Walker (University of Nottingham, UK), Prof. Md. Pourkashanian (Univ of Sheffield, UK), Prof. K.S. Reddy (IIT Madras), Prof. Prakash Ghosh (IIT Mumbai)

3) Project title: **BEFWAM- Bioenergy, Fertilizer and clean water from invasive aquatic macrophytes (Extended upto March 2022) [**(BB/S011439/1 dated 3.12.2018)]
A research project under the Indo-UK –Uganda Collaborative Research Initiative on *providing bioenergy, fertilizer and clean water from invasive aquatic macrophytes.*

Sponsoring agency: BBSRC-RCUK (2019-2022)

Amount Sanctioned: **UK£.1,958,977** /- of which the amount for Visva-Bharati is **UK£.262,595.28**/-. Prof. Shibani Chaudhury (Co-PI), Prof. A. Hazra (Co-PI) and Dr. S. Balachandran (Co-PI).

Collaboration with Dr. Andrew B. Ross (PI), Dr. Valerie Dupont, Prof. Jon Lovett, Dr. Miller Alonso Camargo-Valero, Univ. of Leeds; Prof. A.B. Pandit, ICT, Mumbai; Mary Suzan Abbo, CREEC, Uganda; Gaurav Nahar, Defiant Renewables, Pune,

4) Name of the Project; **"Development, Research and Pilot scale installation of solar-hydro pumped storage scheme in a remote village of Manipur to ensure 24x7 electricity**" [DST/TMD/MI/OGMI/2018/14 (G) dated 28.8.2018] Sponsoring agency; DST, Period 2018-2020, Extended upto March 2021
Amount Sanctioned: **Rs. 2,60,67,500,** of which the amount for Visva-Bharati is Rs. 88,57,000. Prof. Shibani Chaudhury, Dept. of Environmental Studies, is the Principal Investigator, and Prof. Amit Kumar Hazra, Department of Lifelong Learning & Extension, PSV and Dr S. Balachandran, Dept. of Environmental Studies are the Co-Investigators of the project.
Collaboration with Dr. SP Gonchaudhury, NBIRT Kolkata

5) Name of the Project: *"***Earthworm Gut Microbes Mediated Carcinogenic Polycyclic Aromatic Hydrocarbons (CPAHs) Remediation in Contaminated Soil*"***
Sponsoring Agency: DBT under Twinning Program [BT/PR25738/NER/95/1329/2017]
Sponsoring Agency; DBT Twinning project, Period; December 2018-December 2021
Amount Sanctioned: Rs. ***56,39,200*** /- of which the amount for Visva-Bharati is Rs. 22,54,600 /-.
Dr. S. Balachandran (PI), Prof. N.C. Mandal, Dept. of Botany, Visva-Bharati (Co-PI)
Collaboration with the Department of Environmental Sciences, Tezpur University

6) Name of the Project: "**Community water supply scheme based on Integrated Rainwater harvesting and Solar PV water pumping system**"
Sponsoring Agency: DST, Period- September 2021 to September 2023 [TMD(EWO)/ITISE/2020/08(G)] dated 24.09.2020
Prof. Amit Kumar Hazra, Department of Lifelong Learning & Extension, PSV (PI of the Project) and Dr. S. Balachandran, Dept. of Environmental Studies (Co-Investigator)
Collaboration with Richik GhoshThakur, NB Institute of Rural Technology- Kolkata
Amount Sanctioned- INR 1,39,22,880/-

7) Name of the Project: **"Improving Sustainability of Present-day Manure based Biogas Digesters through Biochar Addition."**
Sponsoring Agency: Royal Academy of Engineering, United Kingdom, under the Technology Programme [Transforming Systems through Partnership Program] February 2024 to January 2025 [TSP-2325-5-163] dated 08.02.2024
Prof. Manosh Paul and Prof. Arjunan Subramanian, University of Glasgow, UK (Academic Partner) Suiso Pvt. Ltd, UK (Industrial partner)

Dr. Balachandran, Department of Environmental Studies, Institute of Science, Visva-Bharati, PI of the Project, Prof. Amit Kumar Hazra, Department of Lifelong Learning and Rural Extension, Institute of Rural Reconstruction, Visva-Bharati (Co-PI)
Dr Gaurav Nahar, Defiant Renewables, Pune (Industrial partner)
Amount Sanctioned- £ 64,450/-

Ongoing projects:

1. Name of the Project: "**Ensuring Energy security and green livelihood of rural communities of Tripura using affordable Solar Energy and local resources**"
   Sponsoring Agency: DST, Period- October 2023 to October 2026 [SEED/TIASN-2/2023/251] dated 27.10.2023
   Mr. Richik GhoshThakur, NB Institute of Rural Technology- Kolkata, PI
   Dr. S. Balachandran, Dept. of Environmental Studies (Co-PI)
   Amount Sanctioned- INR 1,36,30,759/-

2. Name of the Project:: **"Need based technology intervention for livelihood enhancement of tribal community in Lakshmipur, Illambazar Block, Birbhum, West-Bengal".**
   Sponsoring Agency: DST, Period- 2025 to 2027 **DST/SEED/TSP/STI/2023/941 dated 07.01.2025**
   Dr. S. Balachandran, Dept. of Environmental Studies (PI)
   Mr. Richik GhoshThakur, NB Institute of Rural Technology- Kolkata, Co-PI
   Prof. Amit Kumar Hazra, Department of Lifelong Learning and Rural Extension, Institute of Rural Reconstruction, Visva-Bharati (Co-PI)
   Amount Sanctioned- Rs.1,04,63,142/-

3. Name of the Project: **"Improving Sustainability of Present-day Manure based Biogas Digesters through Biochar Addition – FOF 2025"**
   Sponsoring Agency: Royal Academy of Engineering, United Kingdom, under the Technology Programme [Transforming Systems through Partnership Program] 03 February 2025 to 13 January 2026 [TSP-2526-7108] dated 28/01/2025
   Prof. Manosh Paul, Prof. Arjunan Subramanian and Dr. Zhanhan Yu from the University of Glasgow, UK (Academic Partner) Suiso Pvt. Ltd, UK (Industrial partner)
   Dr. Balachandran, Department of Environmental Studies, Institute of Science, Visva-Bharati, PI of the Project, Prof. Amit Kumar Hazra, Department of Lifelong Learning and Rural Extension, Institute of Rural Reconstruction, Visva-Bharati (Co-PI)
   Dr Gaurav Nahar, Defiant Renewables, Pune (Industrial partner)
   Amount Sanctioned- £42,664.38 /-

S. Balachandran