

CURRICULUM VITAE

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Present Address : H# 36, R#7, Block-Kha, Pisciculture Housing
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District : Jessore



Working Experience:

Duration	Project/ Organization	Position	Major Duty
May 23, 2024 to Present	Climate-Smart Agriculture and Water Management (CSAWM) Project, Bangladesh Water Development Board (BWDB)	Environmental Expert	Assist in review and update Environmental Management Plan. Assist in review and clear EAs/EMPs of the Project. Assist in Design and conduct surveys and studies to assess environmental impact of the project. Assist in formulate grievance process to address environmental and social safeguards issues for adoption by the project. Assist the project authority to supervise technical studies to monitor key environmental issues; Perform any other project related works assigned by the Project Director and liable to the project Director
January 01, 2023 to May 31 2024	Research and Development Department at GAZI Renewable Energy Ltd.	Assistant Manager (Environment)	Assisting in research works, Preparing databank on different research areas, Data entry into excel sheet, Data coding in different statistical packages : SPSS and Excel, Conducting complex research models using statistical software like Rstudio and Python, GIS/RS data processing, image analysis using machine learning, data validation, ArcGIS mapping and statistical analysis, trend analysis on climatic data (CMIP6, BMD, TRMM, GSMaP, GPM), Climate data downscaling, interpretation, research documentation such as literature reviews, writing research methodologies, analyzing different sampling techniques, Analysis of data findings with relevant literature, graphs, charts, diagrams and critical analysis of both qualitative and quantitative research models based on software findings, Writing research article , working as co-author in articles to be published.
March 01, 2020 To 31 Dec 2022	Plan Plus Limited (PPL)	Junior Environmental Expert	EIA report preparation, GIS and RS data analysis, Office Management, Team management, Field Visit, Data Collection, Data Analysis, Proposal and report writing, Cooperation with different projects and report writing.
May 27, 2023 to Present	Advances in Geographical Research (AIGR)	Teacher/ Resource Person (Online)	The job role encompasses conducting hazards, vulnerability, and risk assessments to address environmental and societal challenges. It involves evaluating groundwater potential and identifying stress zones using advanced techniques, including machine learning, for data analysis and predictive modeling. Additionally, the role includes organizing and delivering training sessions and workshops to disseminate knowledge and skills. A significant aspect of the job is

			contributing to academic research by publishing findings in peer-reviewed journals, fostering advancements in the field.
Sept 01, 2020 to Dec 31, 2020	RAiN Forum	Research Fellow	Research work, Data Analysis, Article Writing, Presentation
June 1, 2019 to February 28, 2020	IWFM, BUET	Research Assistant	RS and GIS data analysis, Laboratory work (Water Sample Analysis), Report writing, Data Analysis, Report Presentation, Field Visit, Desk work, Data analysis, Report Writing, Report Presentation
Oct 1, 2018 to May 31, 2019	Plan Plus Limited (PPL)	GIS Data Analyst	Designs and edits GIS data for numerous projects, maintains databases and ensures that these databases are up to date and accurate, designing digital maps with geographic data and other data sources, LULC Map preparation, Field visits, Secondary Data Collection, Data Analysis, Report Writing, Communication with Project office, Team Management, work schedule maintains, Communicate with foreign delegates, etc
December 01, 2017 to Sep 30, 2018	Soil Resource Development Institute, Noakhali	L ab internships	Soil and water Sample Collection, Sample Preparation, physical, chemical and biological property test of sample data, Data report preparation

Academic Qualification:

Masters of Science in Water Resource Development (WRD)| 2024

Bangladesh University of Engineering and Technology (BUET) ICGPA: 3.00 (out of 4.00)

Bachelor in Environmental Science and Disaster Management| 2016

Noakhali Science and Technology University (NSTU) ICGPA: 3.72 (out of 4.00)

Higher Secondary Certificate (HSC)| 2011

Natunhat Public College, Jessore | Group: Science | GPA: 5.00 (out of 5.00)

Secondary School Certificate (SSC)| 2009

Angarpara Bohirumpur High School, Jessore | Group: Science | GPA: 5.00 (out of 5.00)

Journal Publication:

1. **Roy, S. K.**, Dey, S., Das, J., Hossen, B., Das, S., Hasan, M. M., & Mojumder, P. (2025). Utilising machine learning approaches for enhanced landslide susceptibility mapping in Sikkim, India. *Geological Journal*, 1–20. <https://doi.org/10.1002/gj.5198>
2. Kunjir, G. M., Tikle, S., Das, S., Karim, M., **Roy, S. K.**, & Chatterjee, U. (2025). Assessing particulate matter (PM_{2.5}) concentrations and variability across Maharashtra using satellite data and machine learning techniques. *Discover Sustainability*, 6(1), 1-20.
3. Assessment of Groundwater Potential Zone After Rohingya Rehabilitation Using GIS and Analytic Hierarchy Process (AHP) Techniques in Ukhia Upazila, Cox's Bazar. *Adv's Geographic Inf.Sci. (Progress in Multicriteria Decision Making Models)* (**Accepted, 2025**)
4. Fly ash pollution causes morpho-anatomical and biochemical changes in *Eichhornia crassipes* (Mart.) Solms and *Pistia stratiotes* L: Demonstrating stress-tolerant activity. *Scientific Report* (**Accepted, 2025**)
5. Hasan, M. M., Talha, M., Akter, M. M., Ferdous, M. T., Mojumder, P., **Roy, S. K.**, & Nasher, N. R. (2025). Assessing the performance of machine learning and analytical hierarchy process (AHP) models for rainwater harvesting potential zone identification in hilly region, Bangladesh. *Journal of Asian Earth Sciences*: X, 13, 100189.
6. **Roy, S. K.**, Mojumder, P., Chowdhury, M. A. A., & Hasan, M. M. (2025). Evaluating mangrove forest dynamics and fragmentation in Sundarbans, Bangladesh using high-resolution Sentinel-2 satellite images. *Global Ecology and Conservation*, e03493.

7. **Roy, S. K.**, Mati, S., Zidan, M. Z. R., Hossen, B., Ozsahin, D. U., & Abioui, M. (2025). EVNN-GRFN integrated with BFGS-ARMA for rainfall prediction in Bangladesh. *Earth Science Informatics*, 18(2), 229.
8. Manna, H., Mallick, S. K., Sarkar, S., & **Roy, S. K.** (2025). Developing decision making framework on built-up site suitability assessment for urban regeneration in the industrial cities of Eastern India. *Scientific Reports*, 15(1), 5708.
9. Ismail, M., **Roy, S. K.**, Dey, T., Basak, J. K., Chowdhury, A. A., Ullah, F., & Ahmed, S. (2025). Carbon sequestration potential of Sonneratia apetala plantation forests in the Chakaria Sundarbans: Effects of stand age and structure. *Regional Studies in Marine Science*, 104104.
10. Md. Mahmudul Hasan, Md. Talha, Most. Mitu Akter, Md Tasim Ferdous, Pratik Mojumder, **Sujit Kumar Roy**, N.M. Refat Nasher (2025). Assessing the performance of machine learning and analytical hierarchy process (AHP) models for rainwater harvesting potential zone identification in hilly region, Bangladesh, *Journal of Asian Earth Sciences: X*. Volume 13, 100189, ISSN 2590-0560
11. Rabbani, M., Hossain, M. S., Islam, S. S., **Roy, S. K.**, Islam, A., Mondal, I., & Imam Saadi, S. M. A. (2024). Assessing thermal power effluent-induced air quality and associated environmental stress on Blumea lacera and Phyla nodiflora using chemometric, remote sensing and machine learning approach. *Geology, Ecology, and Landscapes*, 1-19.
12. Ismail Mondal, Jatisankar Bandyopadhyay, SK Ariful Hossain, Hamad Ahmed Altuwaijri, **Sujit Kumar Roy**, Javed Akhter, Lal Mohammad & Mukhiddin Juliev (2024). Evaluating the effects of rapid urbanization on the encroachment of the east Kolkata Wetland ecosystem: a remote sensing and hybrid machine learning approach. *Environ Dev Sustain*. <https://doi.org/10.1007/s10668-024-05832-7>
13. **Roy, S. K.**, Morshed, A., Mojumder, P., Hasan, M. M., & Islam, A. S. (2024). Innovative trend analysis technique with fuzzy logic and K-means clustering approach for identification of homogenous rainfall region: A long-term rainfall data analysis over Bangladesh. *Quaternary Science Advances*, 15, 100227.
14. Dey, S., Das, S., & **Roy, S. K.** (2024). Landslide susceptibility assessment in Eastern Himalayas, India: a comprehensive exploration of four novel hybrid ensemble data driven techniques integrating explainable artificial intelligence approach. *Environmental Earth Sciences*, 83(22), 1-25.
15. **Roy, S. K.**, & Chowdhury, M. A. (2024). Morphometric analysis and watershed delineation of the Karnaphuli river basin: A comparative study using different DEMs in Chittagong, Bangladesh. *River*.
16. Hasan, M. M., **Roy, S. K.**, Talha, M. D., Ferdous, M. T., & Nasher, N. M. (2024). Predictive landslide susceptibility modeling in the southeastern hilly region of Bangladesh: application of machine learning algorithms in Khagrachari district. *Environmental Science and Pollution Research*, 1-18.
17. Newton, I. H., Hasan, M. H., Razzaque, S., & **Roy, S. K.** (2024). Assessment of Climate-Induced Rice Yield Using Ordinary Least Squares (OLS) Regression Analysis: A Case Study from Coastal Context. *Earth Systems and Environment*, 1-15.
18. **Roy, S. K.**, Hasan, M. M., Mondal, I., Akhter, J., Roy, S. K., Talukder, S., ... & Karuppannan, S. (2024). Empowered machine learning algorithm to identify sustainable groundwater potential zone map in Jashore District, Bangladesh. *Groundwater for Sustainable Development*, 101168.
19. Khan, N. S., **Roy, S. K.**, Talukdar, S., Billah, M., Iqbal, A., Zzaman, R. U., ... & Mallick, J. (2024). Empowering real-time flood impact assessment through the integration of machine learning and Google Earth Engine: a comprehensive approach. *Environmental Science and Pollution Research*, 1-16.
20. Mondal, I., Hossain, S. A., **Roy, S. K.**, Karmakar, J., Jose, F., De, T. K., ... & Nguyen, N. M. (2024). Assessing intra and interannual variability of water quality in the Sundarban mangrove dominated estuarine ecosystem using remote sensing and hybrid machine learning models. *Journal of cleaner production*, 442, 140889.

21. **Roy, S. K.**, Alam, M. T., Mojumder, P., Mondal, I., Kafy, A. A., Dutta, M., ... & Mahtab, S. B. (2024). Dynamic assessment and prediction of land use alterations influence on ecosystem service value: A pathway to environmental sustainability. *Environmental and Sustainability Indicators*, 21, 100319.
22. Basak, J. K., Paudel, B., Deb, N. C., Kang, D. Y., Kang, M. Y., **Roy, S. K.**, ... & Kim, H. T. (2024). Modeling ammonia concentration in swine building using biophysical data and machine learning algorithms. *Computers and Electronics in Agriculture*, 225, 109269.
23. Sarkar, S., Mallick, S. K., Manna, H., & **Roy, S. K.** (2024). Urbanization-Induced Land Use Dynamics and Its Impacts on Present and Future Urban Ecosystem Services in the Industrial Cities of India. *Earth Systems and Environment*, 1-25.
24. **Roy, S. K.**, Das, T., Barua, T., Chowdhury, M. A., Talukdar, S., Mallick, J., ... & Almakayeel, N. M. (2024). The impact of soil salinity on the chemical properties of soil at Hatiya Upazila, a remote area of Noakhali, Bangladesh. *Journal of Coastal Conservation*, 28(4), 1-15.
25. Mondal, I., Jose, F., & **Roy, S. K.** (2024). Assessment of storm surge and habitat loss during recent Hurricanes and its Prediction: A case study from southwest Florida using ML-based Hydrodynamic Models. *Regional Studies in Marine Science*, 103683.
26. Rabbani, M., Hossain, M. S., Islam, S. S., **Roy, S. K.**, Islam, A., Mondal, I., & Imam Saadi, S. M. A. (2024). Assessing thermal power effluent-induced air quality and associated environmental stress on *Blumea lacera* and *Phyla nodiflora* using chemometric, remote sensing and machine learning approach. *Geology, Ecology, and Landscapes*, 1-19. <https://doi.org/10.1080/24749508.2024.2430042>
27. Al Mamun, M. A., Sarker, M. R., Sarkar, M. A. R., **Roy, S. K.**, Nihad, S. A. I., McKenzie, A. M., ... & Kabir, M. S. (2024). Identification of influential weather parameters and seasonal drought prediction in Bangladesh using machine learning algorithm. *Scientific Reports*, 14(1), 566.
28. Sarkar, S., Manna, H., **Roy, S. K.**, Dolui, M., & Hossain, M. (2024). Synergizing remote sensing and ecological indicators (RSEIs) for evaluating ecological environmental quality (EEQ) in Asansol Municipal Corporation: an integrated approach. *Environmental Monitoring and Assessment*, 196(7), 631.
29. Ahmed, I., Chowdhury, M. A., Zzaman, R. U., Islam, S. L. U., Nahar, S., & **Roy, S. K.** (2024). Assessing vulnerability of fishermen communities in coastal Bangladesh: A “climate vulnerability index”-based study in Assasuni Upazila, Satkhira, Bangladesh. *Natural Hazards Research*.
30. Rahman, M., Rashid, F., **Roy, S. K.**, & Habib, M. A. (2024). Application of extreme learning machine (ELM) forecasting model on CO2 emission dataset of a natural gas-fired power plant in Dhaka, Bangladesh. *Data in Brief*, 54, 110491.
31. Kabir, M. M., **Roy, S. K.**, Alam, F., Nam, S. Y., Im, K. S., Tijing, L., & Shon, H. K. (2023). Machine learning-based prediction and optimization of green hydrogen production technologies from water industries for a circular economy. *Desalination*, 116992.
32. Chowdhury, M. A., Razzaque, S., Hasan, M. R., Tarin, N. J., Newton, I. H., **Roy, S. K.**, & Deb, A. (2023). Perception of Students on Mental Health-Related Issues in Bangladesh: An Investigation Regarding Dissertation. Available at SSRN 3975626.
33. Chowdhury, M. A., Tarin, N. J., **Roy, S. K.**, & Mahmood, S. (2022). Climate-friendly business: A study to assess its potential in the coastal areas of Bangladesh. *Journal of Coastal Conservation*, 26(6), 65.
34. Khan, N. S., **Roy, S. K.**, Mazumder, M., Rahman, T., Talukdar, S., & Mallick, J. (2022). Assessing the long-term planform dynamics of Ganges–Jamuna confluence with the aid of remote sensing and GIS. *Natural Hazards*, 1-24.
35. Talukdar, Swapam & **Kumar Roy, Sujit** & Sarkar, Showmitra Kumar & Mahato, Susanta & Pal, Swades & Rahman, Atiqur & Praveen, Bushra & Das, Tanmoy. (2022). Application of Hybrid Machine Learning Algorithms for Flood Susceptibility Modeling. *GIScience & Geo-environmental Modelling*, 07 April 2022.

36. Talukdar, S., Mallick, J., Sarkar, S. K., **Roy, S. K.**, Islam, A. R. M., Praveen, B., ... & Sobnam, M. (2022). Novel hybrid models to enhance the efficiency of groundwater potentiality model. *Applied Water Science*, 12(4), 1-22.
37. Mallick, J., Alqadhi, S., Talukdar, S., Sarkar, S. K., **Roy, S. K.**, & Ahmed, M. (2022). Modelling and mapping of landslide susceptibility regulating potential ecosystem service loss: an experimental research in Saudi Arabia. *Geocarto International*, 37(25), 10170-10198.
38. Sarkar, S. K., Talukdar, S., Rahman, A., & **Roy, S. K.** (2022). Groundwater potentiality mapping using ensemble machine learning algorithms for sustainable groundwater management. *Frontiers in Engineering and Built Environment*, 2(1), 43-54.
39. Barua, T., **Roy, S. K.**, & Munna, M. H. (2019). Status of drinking water quality and sanitation facilities in Subarnachar and Majdee in Noakhali, Bangladesh. *Asian Journal of Medical and Biological Research*, 5(1), 37-47.
40. Barua, T., Munna, M. H., & **Roy, S. K.** (2019). Comparison of different parameters of four selected industrial effluents in BSCIC industrial estate, Begumganj, Noakhali, Bangladesh, Bangladesh. *International Journal of Scientific & Engineering Research (IJSER)*, 10(3), 46-56.

Academic Research Work:

BSc. Thesis Title: Status of drinking water quality and sanitation facilities in Subarnachar and Majdee in Noakhali, Bangladesh.

MSc. Thesis Title: Development of High-Resolution Surface Soil Moisture Using Spatial Data with Machine Learning and Deep Learning Model in Bangladesh

Software Expertise:

- ❖ **Office Suits:** MS Office
- ❖ **Graphic Tools:** Adobe Photoshop, Adobe Illustrator, In design
- ❖ **Remote Sensing and GIS Software:** ArcGIS, QGIS, Google Earth Engine (GEE), ArcGIS Pro
- ❖ **Statistical Analysis:** SPSS
- ❖ **Data Science and Machine Learning:** R Programming, Python Programming
- ❖ **Rainfall Modeling:** SMExRain, Easyfit, Climact2

Research Interests:

✓ RS And GIS Applications	✓ Groundwater Hydrology	✓ Time Series Analysis	✓ Natural Hazards (e.g., Landslides, Floods, Droughts)
✓ Ecosystem Dynamics	✓ Climate Change	✓ Coastal Zone Management	✓ Leveraging Machine Learning and Deep Learning Within Environmental Studies

Conference Participation:

- ❖ Participation in the 2nd International Seminar – 2024 titled “Innovative Approaches in Geographical Research: Exploring New Dimensions for Sustainable Development Goals

(SDGs),” Organized by Department of Geography, Rampurhat College, Birbhum, West Bengal, India.

- ❖ Participation in the International Conference (Online) on Climate Change, Disaster Management, and Environmental Sustainability, 2024 under Department of Geography, Faculty of Sciences, Jamia Millia Islamia (JMI), New Delhi
- ❖ Session Coordinator and Participants at Recent Advancement in Geographical Studies: A Multidimensional Outlook, 2023, Rampurhat College, India.
- ❖ Participants at 8th International Conference on Water and Flood Management (ICWFM), 2021
- ❖ Participants at 6th Gobeshona Conference, 2020
- ❖ Volunteer at 7th International Conference on Water and Flood Management (ICWFM), 2019
- ❖ Participants at Dhaka Water Knowledge Days (DWKD), 2019

Trainer Experience

- “GIS Application in Water/Sewer Network Modelling” at P&D Division, Dhaka WASA
- “RS and GIS Hands-on Training program” at ESDM, NSTU; Shahidul Consultant Ltd.
- “Google Earth Engine (GEE) for Remote Sensing & GIS Analysis: Beginners to Advance” at Advances in Geographical Research Institute
- “Machine Learning (ML) for Landslide Prediction Mapping with RStudio and ArcGIS” at Advances in Geographical Research Institute
- “Statistical Data Analysis and Visualization with R Programming: From Basics to Advanced Analytics” at Advances in Geographical Research Institute

Declaration:

I do hereby declare that the particulars provide here are true to the best of my knowledge and no misinformation is given.



Sujit Kumar Roy

References

<p>Professor and ex-director, A.K.M. Saiful Islam Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET). Lead Author, Seven Assessment Report, Working Group I (WG I), IPCC, 2018-present. Email: akmsaifulislam@iwfm.buet.ac.bd , saiful3@gmail.com</p>	<p>Professor, Dr. Sujit Kumar Bala Chairman of Dhaka WASA Board, WASA Bhaban, 98, kazi Nazrul Islam Avenue, Kawranbazar, Dhaka. Former Professor at Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET) Email: bala@iwfm.buet.ac.bd, balaresponsible@gmail.com</p>	<p>Managing Director, Md. Mohirul Islam Mohir Plan Plus Limited H#36. R#7, Pisciculture Housing Society, Adabar, Dhaka Email: planplusbd@gmail.com</p>
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