## Curriculum Vitae

### Personal details and the date of the CV

* Surname: LAGHARI
* First names: MAHMOOD
* Date of Birth: 05 February 1982
* ORCID: 0000-0002-7804-0067
* Email: [mlaghari7@gmail.com](mailto:mlaghari7@gmail.com)
* Mobile: +923013983668
* Date: 2024.10.29
* Mailing address: Department of Energy and Environment, Sindh Agriculture University,

Tandojam 70060, Sindh Province, Pakistan

### Degrees

* June 2015, **PhD in Environmental Engineering**, School of Environmental Science and Engineering, Huazhong University of Science and Technology (HUST), Wuhan, China. Title of thesis: “Preparation of fast pyrolysis biochars and their applications in desert soils”, Supervisors: Professor Zhiquan Hu.
* August 2012, **Masters in Agricultural Engineering**, Faculty of Agricultural Engineering, Sindh Agriculture University, Tandojam, Sindh, Pakistan.
* January 2005, **Bachelors in Agricultural Engineering**, Faculty of Agricultural Engineering, Sindh Agriculture University, Tandojam, Sindh, Pakistan.

Other education and expertise

* November 2018 − November 2020, **H.C Ørested Marie Curie Postdoctoral Fellowship** in Biomass Pyrolysis and Gasification, Department of Chemical & Biochemical Engineering, Technical University of Denmark (DTU), Mentor: Dr. Maria Puig-Arnavat, Research Title: Optimal **T**h**E**rmal **M**anagement of secondary biomass resources for **P** and **E**nergy **R**ecovery in a modern society (TEMPER).

Job description:During my position, I conducted a self-designed research project focusing on thermal management of significant biomass resources, aiming to recover plant nutrients, primarily phosphorus (P). I successfully prepared phosphorus-rich biochar and ashes from materials like sewage sludge, cattle and poultry manure, biogas fiber, wheat straw, and wood chips. These materials were tested to improve soil fertility in two Danish soils. The project's interesting results were published in the BFI research journal "Waste and Biomass Valorization." I collaborated with experts from the Institute of Plant and Environmental Sciences, University of Copenhagen, and the Danish company AquaGreen, which provided valuable experiences. Under the guidance of Senior Scientists Jasper Ahrenfeldt and Ulrik Birk Henriksen, I honed my technical skills, advanced laboratory analyses, research grant writing, and presentation abilities, gaining a well-rounded professional experience.

### Language skills

* Urdu: Fluent
* Sindhi: Fluent
* English: Fluent
* Chinese: Basic

### Current employment

* August 2024 − present, Professor & Chair, Department of Energy and Environment, Faculty of Agricultural Engineering, Sindh Agriculture University, Tandojam, Sindh, Pakistan

### Previous work experience

* November 2020 − August 2024, Associate Professor & Chair, Department of Energy and Environment, Faculty of Agricultural Engineering, Sindh Agriculture University, Tandojam, Sindh, Pakistan.

Job Description: I am entrusted with the comprehensive management of the degree-offering department, which entails various crucial responsibilities. These include strategic planning, meticulous budgeting, efficient fund utilization, and the evaluation of faculty and staff performance. As Chair of the Board of Studies, I play a pivotal role in shaping the academic direction for the department's postgraduate research over the next five years, while also fostering strong research and academic partnerships with national and international institutions. Additionally, I oversee the seamless handling of research grant applications within the department and actively coordinate seminars and events. Another essential aspect of my role is providing guidance and mentorship to both PhD and Masters students, along with instructing postgraduate and undergraduate courses. This diverse array of responsibilities reflects my commitment to maintaining the department's excellence and driving it towards continued growth and success.

* February 2017 – November 2018, Associate Professor & Chair, Department of Energy and Environment, Faculty of Agricultural Engineering, Sindh Agriculture University, Tandojam, Sindh, Pakistan.

Job description: I was honoured to be the youngest person appointed to this prestigious position, recognized for my exceptional research contributions and high-quality publications during my PhD studies. Throughout my tenure, I actively engaged in enriching the academic experience of both undergraduate and postgraduate students through teaching and mentoring. I had the privilege of supervising several master's students as their primary advisor, guiding them towards their academic and research goals

* July 2015 – February 2017, Assistant Professor, Department of Energy and Environment, Faculty of Agricultural Engineering, Sindh Agriculture University, Tandojam, Sindh, Pakistan

Job description: After completion of PhD degree, I was appointed as Assistant Professor in the same department as mentioned above. I was actively involved in teaching to undergraduate and postgraduate students.

* July 2008 – August 2012, Lecturer, Department of Farm Power & Machinery, Faculty of Agricultural Engineering, Sindh Agriculture University, Tandojam, Sindh, Pakistan

Job description: As a young Lecturer, I was actively involved in teaching to undergraduate students of Agricultural Engineering, I taught different subjects including Engineering Drawing, Engineering Drawing and Graphics, Farm Machinery, Internal Combustion Engines and Tractors, Workshop Organization and Management etc. Some courses also involved practical.

* March 2007 – June 2008, Support Service Engineer/Agricultural Engineer, Engro Polymer and Chemicals, Karachi, Pakistan

Job description: I worked as a Field Engineer and Projects Coordinator in Engro Polymer and Chemical Ltd.'s market development project. My primary responsibility involved designing and overseeing the construction of PVC geomembrane lining projects, specifically agricultural earthen reservoirs across the country. The company aimed to support the government and private sector in developing the PVC market, and thus, I provided technical assistance to micro irrigation projects utilizing drip and sprinkle irrigation systems. My duties encompassed conducting regular meetings with stakeholders from the public and private sectors, designing projects with accurate cost estimates and bill of quantities, supervising on-site project implementations, overseeing the commissioning of installed projects, and providing support for after-sales services. Our efforts were highly successful in assisting newly emerging enterprises in the field of micro irrigation business at that time.

* September 2005 – March 2007, Junior Engineer, Euroconsults PVT., Pakistan.

Job description: I was a Junior Engineer at a consultancy company where my main responsibility was providing technical assistance for the government's project "National Program for Improving Watercourses." As a registered agricultural engineer, I actively participated in verifying the design and cost estimates of watercourse lining prepared by the client. I conducted regular inspections of civil work on watercourses and certified completed projects. Additionally, I was involved in preparing progress reports to track the project's advancements and achievements.

### Research funding and grants

* April 2022 to March 2024; Research project title: “Use of **B**iochar in biomass composting fo**R** h**IGH** quali**T**y Biochar-compost production (BRIGHT)”; Role: Principal Investigator; Funding Agency: Sindh Higher Education Commission, Karachi, Pakistan; Grant Amount: PKR. 3.284 million.
* November 2018 − November 2020; Research project title: Optimal **T**h**E**rmal **M**anagement of secondary biomass resources for **P** and **E**nergy **R**ecovery in a modern society (TEMPER); Role: Principal: Principal Investigator; Funding Agency: European Union’s Department of Excellence Science Research Executive Agency, Brussels, Grant Agreement No. 713683; Grant Amount: Equivalent to 24 Salaries as a H.C Ørested Postdoctoral Fellowship.
* Research project title: Advanced **T**hermal management of biomass r**E**sources for **NU**trients and energy **RE**covery for sustainable agriculture (TENURE); Role: Principal Investigator; Funding Agency: Sigher Education Commission of Pakistan; Grant Amount: PKR. 24.95 million; Status: Under panel review
* Research project title: Evaluation of carbon emission from co-gasification of municipal sludge and straw; Role: Principal Investigator; Funding Agency: Pakistan Science Foundation (PSF); Grant Amount: PKR. 4.0 million; Status: Under panel review.

### Research output

* Times cited > 1875, h-index: 14 (data taken from “Google Scholar”)
* List of publications:

1. Leghari, A., Kumar, A., Laghari, A.A., Laghari, M., et at. (2024). Insights into Toxic Heavy Metal Speciation dynamics during CO2 gasification of sewage sludge-derived hydrochar. Fuel, (Submitted)
2. Rajput, N. A., Laghari, M\*., & Soothar, R. K. (2024). Enhanced phosphorus and potassium recovery through co-pyrolysis of nutrient-rich biomass feedstocks for engineered biochar production. Bioresource Technology Reports, 26, 101818.
3. Rong, H., He, P., Luo, Y., Cai, H., Laghari, M., Guo, D., Ren, Y., Cui. B., 2023. Research progress of main synthetic catalysts used in biomass pyrolysis. Process Safety and Environmental Protection 179, 27-37. (IF. 7.8)
4. Jia, Y., Wang, Y., Zhang, Q., Rong, H., Liu, Y., Xiao, B., Guo, D., Laghari, M., Ruan, R., 2022. Gas-carrying enhances the combustion temperature of the biomass particles. Energy 239, 121956. <https://doi.org/https://doi.org/10.1016/j.energy.2021.121956> (IF=9.0)
5. Jianfen Li, Rongyi Gao, Longkai Zhu, Yiran Zhang, Zeshan Li, Bolin Li, Jiaxiang Wang, Ji He, Yun He, Zhenhua Qin, Laghari M., Dabin Guo., 2022. Hydrogen-Rich Gas Production with the Ni-La/Al2O3-CaO-C Catalyst from Co-Pyrolysis of Straw and Polyethylene. Catalysts 12(15), 496 (IF = 4.5)
6. Laghari, M\*., Müller-Stöver, D.S., Puig-Arnavat, M., Thomsen, T.P., Henriksen, U.B.: Evaluation of Biochar Post‐Process Treatments to Produce Soil Enhancers and Phosphorus Fertilizers at a Single Plant. Waste and Biomass Valorization. (2021). https://doi.org/10.1007/s12649-021-01358-5 (IF= 3.2)
7. Keerio, G.S., Keerio, H.A., Ibuphoto, K.A., Laghari, M., Panhwar, S., Talpur, M.A.: Arsenic removal through bio sand filter using different bio-adsorbents. J. Water L. Dev. 48, 11–15 (2021). https://doi.org/10.24425/jwld.2021.136141
8. Hu, M., Laghari, M., Cui, B., Xiao, B., Zhang, B., Guo, D.: Catalytic cracking of biomass tar over char supported nickel catalyst. Energy. 145, (2018). https://doi.org/10.1016/j.energy.2017.12.096 (IF = 9.0)
9. Laghari, M., Naidu, R., Xiao, B.B., Hu, Z., Mirjat, M.S., Hu, M., Kandhro, M.N.M.N., Chen, Z., Guo, D., Jogi, Q., Abudi, Z.N.Z.N., Fazal, S.: Recent developments in biochar as an effective tool for agricultural soil management: a review. J. Sci. Food Agric. 96, 4840–4849 (2016). https://doi.org/10.1002/jsfa.7753 (IF = 4.1)
10. Naji, Z., Hu, Z., Xiao, B., Abood, A.R., Rajaa, N., Laghari, M.: Effects of pretreatments on thickened waste activated sludge and rice straw co-digestion : Experimental and modeling study. J. Environ. Manage. 177, 213–222 (2016). https://doi.org/10.1016/j.jenvman.2016.04.028 (IF = 8.7)
11. Hu, M., Chen, Z., Wang, S., Guo, D., Ma, C., Zhou, Y., Chen, J., Laghari, M., Fazal, S., Xiao, B., Zhang, B., Ma, S.: Thermogravimetric kinetics of lignocellulosic biomass slow pyrolysis using distributed activation energy model, Fraser-Suzuki deconvolution, and iso-conversional method. Energy Convers. Manag. 118, (2016). https://doi.org/10.1016/j.enconman.2016.03.058 (IF = 10.4)
12. Hu, M., Gao, L., Chen, Z., Ma, C., Zhou, Y., Chen, J., Ma, S., Laghari, M., Xiao, B., Zhang, B., Guo, D.: Syngas production by catalytic in-situ steam co-gasification of wet sewage sludge and pine sawdust. Energy Convers. Manag. 111, (2016). https://doi.org/10.1016/j.enconman.2015.12.064 (IF = 10.4)
13. Guo, D., Zhu, L., Guo, S., Cui, B., Luo, S., Laghari, M., Chen, Z., Ma, C., Zhou, Y., Chen, J., Xiao, B., Hu, M., Luo, S.: Direct reduction of oxidized iron ore pellets using biomass syngas as the reducer. Fuel Process. Technol. 148, (2016). https://doi.org/10.1016/j.fuproc.2016.03.009 (IF = 7.5)
14. Zhang, B., Gao, L., Fazal, S., Mahmood, Q., Laghari, M., Sayal, A.: Biosand filter containing melia biomass treating heavy metals and pathogens. Polish J. Environ. Stud. 25, 859–864 (2016). https://doi.org/10.15244/pjoes/60433 (IF = 1.871)
15. Laghari, M., Hu, Z., Mirjat, M.S., Xiao, B., Tagar, A.A., Hu, M.: Fast pyrolysis biochar from sawdust improves the quality of desert soils and enhances plant growth. J. Sci. Food Agric. 96, (2016). https://doi.org/10.1002/jsfa.7082 (IF = 4.1)
16. Hu, M., Guo, D., Ma, C., Luo, S., Chen, X., Cheng, Q., Laghari, M., Xiao, B.: A novel Pilot-scale production of fuel gas by allothermal biomass gasification using biomass micron fuel (BMF) as external heat source. Clean Technol. Environ. Policy. (2015). https://doi.org/10.1007/s10098-015-1038-2 (IF = 4.3)
17. Hu, Z., Chen, Z., Li, G., Chen, X., Hu, M., Laghari, M., Wang, X., Guo, D.: Characteristics and kinetic studies of Hydrilla verticillata pyrolysis via thermogravimetric analysis. Bioresour. Technol. 194, (2015). https://doi.org/10.1016/j.biortech.2015.07.007 (IF = 11.4)
18. Laghari, M., Mirjat, M.S., Hu, Z., Fazal, S., Xiao, B.B., Hu, M., Chen, Z., Guo, D.: Effects of biochar application rate on sandy desert soil properties and sorghum growth. Catena. 135, 313–320 (2015). https://doi.org/10.1016/j.catena.2015.08.013 (IF = 6.2)
19. Chen, Z., Hu, M., Zhu, X., Guo, D., Liu, S., Hu, Z., Xiao, B., Wang, J., Laghari, M.: Characteristics and kinetic study on pyrolysis of five lignocellulosic biomass via thermogravimetric analysis. Bioresour. Technol. 192, (2015). https://doi.org/10.1016/j.biortech.2015.05.062 (IF = 11.4)
20. Khan, T.A., Sheraz, K., Laghari, M.: Relationship between seepage and discharge for Kabul river in district Nowshera . Pak. J. Agri., Agril. Engg., Vet. Sci. 31, 249–259 (2015). https://pjaaevs.sau.edu.pk/index.php/ojs/article/view/103
21. Kandhro, M.N., Shah, A.N., Memon, H.R., Kubar, M.I., Laghari, M.: Weed management and yield improvement in cotton through allelopathic mulches of sorghum and sunflower straw. Pak. J. Weed Sci. Res. 21, 523–532 (2015). https://wssp.org.pk/weed/ojs/index.php/pjwsr/article/view/615
22. Shah, A.R., Talpur, M., Laghari, M., Mujtaba, A., Ahmed, S., Soomro, S.A., Solangi, M.: Fuel consumption and operational cost of various tillage implements. Sci. Int. (Lahore). 28, 2651–2653 (2016). http://www.sci-int.com/pdf/636303228409555926.pdf
23. Memon, S.A., Soothar, R.K., Mangrio, M.A., Saraz, R.H., Leghari, M., Shah, A.R.: Comparison of observed with theoretical roughness co- efficient under lined and unlined watercourses. Sci. Int. (Lahore). 27(6), 6053-6056 (2015). http://www.sci-int.com/pdf/636372709256970198.pdf
24. Kandhro, M.N., Baloch, A.W., Ansari, M.A., Laghari, M.: Allelopathic Impact of Sorghum and Sunflower on Germinability and Seedling Growth of Cotton (Gossypium hirsutum L .). J. Basic Applied Sci. 98–102 (2016). DOI: http://dx.doi.org/10.6000/1927-5129.2016.12.15
25. Talpur, M.A., Changying, J., Junejo, S.A., Ran, M., Sarki, A., Shah, A.R., Laghari, M.: Effect of weather on rice crop cultivation : a case study of Jiangpu farm , Nanjing-China. Sci. Int.(Lahore). 28, 1275–1278 (2016). http://www.sci-int.com/pdf/636324838376677941.pdf
26. Laghari, M., Laghari, N., Shah, A.R., Chandio, F.A.: Calibration and performance of tractor mounted rotary fertilizer spreader. Int. J. Advance Res. 2(4), 839–46 (2014). http://www.journalijar.com/article/1660/calibration-and-performance-of-tractor-mounted-rotary-fertilizer-spreader/
27. Sarki, A., Memon, S.Q., Leghari, M.: Comparison of different methods for computing seepage losses in an earthen watercourse. Agricultura Tropica et Subtropica. 41(4), 197–205 (2008). http://agriculturaits.czu.cz/pdf\_files/vol\_41\_4\_pdf/sarki-memon.pdf
28. Conference Proceedings:

* Laghari, M., Arnavat, Puig-Arnavat, M., Ahrenfeldt, J., Henriksen, U.B, Thomsen, T.P.: Recovery of Phosphorus from Municipal Sewage Sludge through Different Thermal Treatments. Nordic Biochar Conference 2019, KTH Royal Institute of Technology, Sweden, October 16-17, 2019.
* Laghari, M., Hu, Z., Xiao, B., Hu, M.: Influence of an Acidic Biochar on Desert Soil Properties and Plant Growth. In: 2nd International Symposium on Biochar and Green Agriculture (BioGra 2015), Nanjing, Jiangsu, China, Apr. 14-18th, 2015.
* Laghari, M., Hu, Z., Xiao, Bo., Hu, M., Tian, M.: Improving Soil Quality of Kubuqi Desert with the Addition of High Temperature Biochar. In: 2nd CLEAR 2014, Chuncheon, Korea, Oct. 5-8th, 2014.
* Laghari, M., Hu, Z., Xiao, B., Lashari, M.S., Hu, M., Tian, M.: Influence of Pine Sawdust Biochar on Water Holding Capacity of Sandy Soil. In: International Workshop on “Biochar in Pakistan: Opportunities and Potential”, Faisalabad, Pakistan, March. 24-27th, 2014

### Research supervision and leadership experience

* I have supervised 10 undergraduate (Final Year Design Projects), 25 Masters theses and 05 PhD theses as main supervisor. The detail of some selected projects and theses is given in teaching portfolio (Appendix-1)
* Supervised a master course “Biomass gasification and sustainability” at the Department of Chemical and Biochemical Engineering, Technical University of Denmark, during Autumn 2019

### Teaching merits

* Obtained a pedagogical training of three months “11th Faculty Professional Development Program” at Higher Education Commission of Pakistan
* Have been teaching various undergraduate and postgraduate courses detail is given in teaching portfolio
* Designed two practical training course for final year students of Agricultural Engineering on i) Tractor’s mechanics and field performance, ii) Diesel exhaust emission control techniques, with the collaboration of CNH Industrial. Organized two sessions of these practical courses in January 2022 at the Faculty of Agricultural Engineering, Sindh Agriculture University Tandojam, Pakistan the resource person was Engr. Mansoor Rizvi, Country Manage-Pakistan, CNH Industrial, Switzerland.
* Designed a training module on “Career Counselling of Agricultural Engineering Graduates” one training session was organized on 13 October 2022 at Sindh Agriculture University, Tandojam
* Teaching experience: 15 years

### Awards and honours

* 2018−2020, two-year fully-funded open-merit Marie Curie Postdoctoral Fellowship under EU’s program “H.C. Ørested CoFund DTU” funded under EU’s Horizon 2020 research and innovation program.
* 2012 − 2015, three-year fully funded open merit overseas PhD scholarship warded by Sindh Agriculture University under Higher Education Commission-funded project “Strengthening and development of SAU Tandojam”.

### Other key academic merits

* Acting as Chairman Board of Studies of the Department of Energy and Environment, Member Board of Faculty, Member Academic Council, Member Senate, Member Conferences Organizing Committee, Sindh Agriculture University, Tandojam
* Member Board of Studies, Centre of Environmental Sciences, University of Sindh Jamshoro, Pakistan
* Member Board of Studies, Department of Energy Systems Engineering, Balochistan University of Engineering and Technology, Khuzdar, Pakistan
* Acting as Convenor of Industrial Liaison Committee of the Faculty of Agricultural Engineering and Technology, Sindh Agriculture University, Tandojam
* Member Industrial Advisory Board, Institute of Environmental Engineering and Management, Mehran University of Engineering and Technology, Pakistan.
* Higher Education Commission of Pakistan’s approved PhD Supervisor in the field of Engineering and Technology
* Member of National Curriculum Revision Committee (NCRC) for Energy Systems Engineering degree program, Higher Education Commission of Pakistan.
* Member of National Curriculum Revision Committee (NCRC) for BS and MS in Environmental Science degree programs, Higher Education Commission of Pakistan
* Member Marie Curie Alumni Association (MCAA)
* Peer reviewer for several scientific research journals including; Bioresource Technology, Biomass and Bioenergy, CATENA, Journal of Cleaner Production.
* Working as Chairman of the Department of Energy and Environment, worked as Coordinator Postgraduate Programs of Faculty of Agricultural Engineering, member sports management committee, Convener Program Team for Quality Enhancement Cell, Sindh Agriculture University Tandojam
* Worked as a member of main organizing committee for organizing “1st International Conference of Biodiversity of Arid Zones” held on March 8-9 at SAU Sub-campus Umerkot, Sindh, Pakistan.

### Scientific and societal impact

* Took initiative and launched new BS (Environmental Science) degree program in the Department of Energy and Environment, Sindh Agriculture University Tandojam. Took responsibilities of curriculum designing, consultative workshops with stakeholders, getting approval of the program from university’s statutory bodies, and accreditation from Higher Educaion Commission (HEC) of Pakistan.
* Publishing articles on significant topics for awareness of common people in local media for example:
* Time to Address the Toxic Smoke of 2-Stroke Rickshaws in Hyderabad, Sindh. Sindh Courier, November 30, 2024
* Fostering Creativity in Pakistan’s Universities. Sindh Courier, August 09, 2023
* Moringa − The Miracle Tree, June 13, 2023
* Air pollution resulting by common mismanagement in Pakistan, Sindh Courier, November 01, 2022,
* بايوڇار جو مختصر تعارف in Monthly Zarai Science, SAU Tandojam, June 02, 2021
* سنڌ ۾ بيروزگار زرعي انجنيئرن لاء ذاتي ڪاروبار جي گنجائش in Daily Ibrat, April 13, 2020
* ڪاربان مونو آڪسا ئيڊ گيس: ھڪ خاموش قاتل in Daily Ibrat, May 04, 2020
* The Carbon Monoxide- a Silent Killer. Sindh Courier, April 27, 2020.

### Other merits

* Actively working as a volunteer to contribute in Pakistan Society of Agricultural Engineers (PSAE) for fund raising, increasing membership, planning and organizing events.
* Member Board of Directors AARDO (Non-governmental Organization working on poverty alleviation in rural areas of Sindh Province of Pakistan for societal benefit.

### Specialized trainings

* December 02 − 07, 2023, Incorporating Climate Resilience Contents in Course, The University of Alabama, The University of Utah, The University of Nevada Las Vegas
* October 16 − 28, 2023, The Thirteen-Days International Training Course on Soil Microorganisms ⎯ Classification, Characteristics and Practice, Institute of Mountain Hazaards and Environment, Chinese Academy of Sciences (CAS), Chengdu, China
* May 2022 to July 2023, Extended Technical Training Program on “Strengthening Skills in Successful Department Chairs” organized by USAID in collaboration with the University of Utah, the University of Nevada, and the University of Alabama, United States of America.
* December 07− 08, 2022, Technical Workshop-II on "Strengthening Skills in Successful Department Chairs", organized by USAID in collaboration with Higher Education Commission of Pakistan, held at Institute of Business Management, Karachi, Pakistan
* November 08 − 17, 2022, AHKNCRD-AARDO International Training Workshop on "Irrigation Systems and Water Management", organized by National Centre for Rural Development in collaboration with African Asian Rural Development Organization, New Delhi, held at NCRD Islamabad, Pakistan
* May 21 − 22, 2022, “Training Course on Geographical Information System (GIS) and Remote Sensing” organized by Geological and Environmental Management Consulting Services, Pakistan (PVT.) Ltd. Held in Pakistan Council of Research in Water Resources, Karachi, Pakistan
* May 10 − 12, 2022, Technical Workshop on "Strengthening Skills in Successful Department Chairs”, organized by USAID in collaboration with Higher Education Commission of Pakistan, held in Marriot Hotel, Islamabad
* June 22 - 23, 2022, “Launching Workshop of The Dutch Fund for Climate & Development (DFCD)” organized by WWF-Pakistan, held in Awari Towers Hotel, Karachi
* December 05 − 06, 2022, “Technical Workshop on "Launching of climate resilient project in Sindh & Baluchistan” organized by USAID, held in Mehran University of Engineering & Technology, Jamshoro, Pakistan
* July 09 − 17, 2018, “The International Training Course on Environmental Heavy Metals – Concept, Poison and Control” organized by and held at Institute of Mountain Hazards & Environment, Chinese Academy of Science, Chengdu, China
* October 25 − November 01, 2013, “2nd International Training Course on Biochar Production, Testing and Application” organized by and held at Zhejiang Agriculture and Forestry University, Hangzhou, China
* April 21 − July 18, 2009, “11th Faculty Professional Development Program”, organized by Higher Education Commission of Pakistan held in Islamabad
* August 06 − 11, 2010, Technical Workshop on "Modelling Water Flow & Contaminant Transport in Soils and Ground Water", organized by Sindh Agriculture University in collaboration with Higher Education Commission of Pakistan held at SAU, Tandojam
* August 04 − 05, 2009, “Second Regional Workshop on Sustainable Water Management”, organized by University of Exeter, UK and Sindh Agriculture University, Pakistan held in SAU Tandojam
* March 09 − 14, 2009, Technical Workshop on "Application of Modern Statistical Techniques in Agriculture and Animal Sciences, organized by Sindh Agriculture University Tandojam and Higher Education Commission of Pakistan held at SAU Tandojam

### Skills

* Leadership, Collaboration and Teamwork, Strategic Planning
* Biomass pyrolysis, Biochar characterization, Soil fertility, Wastewater Treatment, Soil remediation

### Advanced analytical skills

Hands on experience on designing, construction and operation of laboratory-scale pyrolysis reactors, detailed characterization of biochar and ashes including elemental analysis, BET-surface area analysis, nutrients analysis, in-depth soil analyses etc.

### References

Upon request