

Arif Reza, Ph.D.

Department of Soil and Water Systems
 College of Agricultural and Life Sciences
 University of Idaho – Twin Falls R&E Center
 315 Falls Avenue, Twin Falls, ID 83303-1827
 Phone: (208) 293-6208
 E-mail: areza@uidaho.edu

Professional Summary

- More than ten years of experience in the field of *agri-environmental science* with a strong background in nutrient recovery from livestock waste streams, process optimization, real-time controlled odor reduction technologies, nutrient dynamics in agricultural watersheds, nutrient management, non-point source pollution, water quality monitoring and assessment, best management practices, wastewater treatment, conventional agricultural practices and sustainable development.
- Skilled and experienced in innovating and modifying need-based concepts, approaches and theories, conducting initial research, data management, scientific writing, grant writing, participating research projects with cross-functional research teams, designing outcome-based course curriculum, and student assessment.

Education

- 📖 Kangwon National University, Republic of Korea
Ph.D. in Environmental Science 2016
Dissertation title: Non-point source pollutant export and phosphorus budget in a highland agricultural watershed under the influence of monsoon climate
- 📖 Independent University, Bangladesh
M.Sc. in Environment Management 2011
Dissertation title: Application of bioadsorbents for the wastewater treatment of a composite knit industry
- 📖 Hajee Mohammad Danesh Science & Technology University, Bangladesh
B.Sc. in Agriculture 2009
Dissertation title: Effect of nitrogen on the yield and yield contributing characters of two local aromatic varieties of rice

Positions Held

- Post-doctoral Fellow** 03/2021 – till now
 Department of Soil and Water Systems, University of Idaho, United States
 - Designing and conducting experiments related to resource recovery from liquid dairy manure.
 - Scientific and report writing.
 - Advising and mentoring post-graduate students.
 - Attending research seminars and symposiums to discover and discuss new technologies.
- Post-doctoral Fellow** 04/2018 – 02/2021
 Department of Animal Industry Convergence, Kangwon National University, Republic of Korea
 - Scientific and grant writing on animal waste and wastewater management.
 - Designing experiments related to resource recovery from swine wastewater.
 - Advising and mentoring post-graduate students.

- Attending research seminars and symposiums to discover and discuss new technologies.

Assistant Professor **04/2017 – 04/2018**

Department of Environmental Science, College of Agricultural Sciences, IUBAT – International University of Business Agriculture and Technology, Bangladesh

- Teaching and preparing course curriculum and outline.
- Assessing student comprehension through quizzes, assignments, and tests.
- Advising and mentoring undergraduate students.
- Evaluating students' academic and social progress.
- Assisting the university authority in different campus activities.

Courses taught: Fundamentals of Environmental Science, Education for Sustainable development

Post-doctoral Fellow **09/2016 – 02/2017**

Department of Environmental Science, Kangwon National University, Republic of Korea

- Leading and conducting limnological-pedological-sedimentological sampling.
- Data analysis and writing research papers and reports.
- Conducting 'Analysis of water quality parameters' lab class.
- Student assessment and review grades.
- Advising and mentoring undergraduate students.

Research and Teaching Assistant **03/2012 – 08/2016**

Department of Environmental Science, Kangwon National University, Republic of Korea

- Conducting limnological-pedological-sedimentological sampling.
- Managing and analysis of collected samples.
- Data analysis and writing research papers, and reports.
- Conducting 'Analysis of water quality parameters' lab class.
- Student assessment and review grades.

Urban Agro Consultancy Firm, Bangladesh

Research Assistant (Agri-environmental Management Division) **04/ 2009 – 12/ 2011**

- Preparing technical/project proposals.
- Developing new technologies to face problems related to urban agriculture, climate change, and the environment.
- Data analysis and report writing.

Publications

Journal Articles (Published)

1. Shim, S.[†], **Reza**, A.[†], Kim, S., Won, S., and Ra, C. Nutrient recovery from swine wastewater at full-scale: An integrated technical, economic and environmental feasibility assessment. *Chemosphere*. 227. DOI: 10.1016/j.chemosphere.2021.130309 ([†]equally contributed)
2. Kim, S., **Reza**, A., Shim, S., Won, S., and Ra, C. Development of real-time controlled bio-liquor circulation system for swine farms: A lab-scale study. *Animals*. 11(2). DOI: 10.3390/ani11020311
3. **Reza**, A.[†], Shim, S.[†], Kim, S., Won, S., and Ra, C. (2020). Rational budgeting approach as a nutrient management tool for the mixed crop-swine farms in Korea. *Asian-Australasian Journal of Animal Sciences*. 33(9). DOI: 10.5713/ajas.19.0640 ([†]equally contributed)
4. Won, S., Yoon, Y., Hamid, M.M.A., **Reza**, A., Shim, S., Kim, S., Ra, C., and Park, K. (2020). Estimation of greenhouse gas emission from Hanwoo (Korean native cattle) manure management. *Atmosphere*. 11(8). DOI: 10.3390/atmos11080845
5. Shim, S.[†], **Reza**, A.[†], Kim, S., Won, S., Ahmed, N., and Ra, C. (2020). Simultaneous removal

- of pollutants and recovery of nutrients from high-strength swine wastewater using a novel integrated treatment process. *Animals*. 10(5). DOI: 10.3390/ani10050835 (†equally contributed)
6. Shim, S., Won, S., **Reza**, A., Kim, S., Ahmed, N., and Ra, C. (2020). Design and optimization of fluidized bed reactor operating conditions for struvite recovery process from swine wastewater. *Processes*. 8(4). DOI: 10.3390/pr8040422
 7. Shim, S.†, Won, S.†, **Reza**, A.†, Kim, S., Ahn, S., Jung, B., Yoon, B., and Ra, C. (2019). *In vivo* toxicity and *in vitro* solubility assessment of pre-treated struvite as an alternative phosphorus source in animal feed. *Animals*. 9(10). DOI: 10.3390/ani9100785 (†equally contributed)
 8. Kim, M.†, Shim, S.†, **Reza**, A.†, Kim, S., Won, S., Jung, B., Kim, J., and Ra, C. Evaluation of struvite recovered from swine wastewater as an alternative phosphorus source in broiler feed. *Agriculture*. 9(10). DOI: 10.3390/agriculture9100221 (†equally contributed)
 9. **Reza**, A.†, Shim, S.†, Kim, S., Won, S., Ahmed, N., and Ra, C. (2019). Nutrient leaching loss of pre-treated struvite and its application in Sudan grass cultivation as an eco-friendly and sustainable fertilizer source. *Sustainability*. 11(15). DOI: 10.3390/su11154204 (†equally contributed)
 10. Sakib, M. H., **Reza**, A., Afrad, M. S. I., and Lee, S. G. (2019). Socio-economic factors responsible for adoption of alien fish species by fish farmers in Bangladesh. *The Journal of Social Sciences Research*. 5(2), 577-582. DOI: 10.32861/jssr.52.577.582
 11. **Reza**, A.†, Eum, J.†, Jung, S., Choi, Y., Jang, C., Kim, K., Owen, J., and Kim, B. (2019). Phosphorus budget for a forested-agricultural watershed in Korea. *Water*. 11(1). DOI: 10.3390/w11010004 (†equally contributed)
 12. **Reza**, A., Eum, J., Jung, S., Choi, Y., Owen, J. S., and Kim, B. (2016). Export of non-point source suspended sediment, nitrogen and phosphorus from sloping highland agricultural fields in monsoon region. *Environmental Monitoring and Assessment*. 188(692). DOI: 10.1007/s10661-016-5681-9
 13. Jung, S., Kim, K., Lee, Y., Lee, J., Cheong, Y., **Reza**, A., Kim, J., Owen, J. S., and Kim, B. (2016). The effect of phosphorus removal from sewage on the plankton community in a hypertrophic reservoir. *Journal of Ecology and Environment*. 40(9). DOI: 10.1186/s41610-016-0005-0
 14. **Reza**, A., Sheikh, F. A., Zargar, M. A., and Abedin, M. Z. (2016). Facile and efficient strategy for removal of reactive industrial dye by using tea waste. *Advanced Materials Letters*. 7(11), 878-885. DOI: 10.5185/amlett.2016.6363
 15. **Reza**, A., and Yousuf, T. B. (2016). Impacts of waste dumping on surface water quality in the Buriganga River, Bangladesh and possible mitigation measures. *Journal of the Environment*. 11(1), 35-40.
 16. **Reza**, A.*, Rafique, M., Ahmad, N., Naeem, A., Saadat, S., and Shahnawaz, M. (2016). Determination of trace elements in tap water using PIXE technique. *Journal of Chemical and Pharmaceutical Sciences*. 9(1), 34-38. (*corresponding author)
 17. **Reza**, A., Sheikh, F. A., Abedin, M. Z., and Kim, H. (2015). Facile strategy for utilizing sugarcane bagasse as bio-adsorbent for the removal of contaminant from effluents of textile industry. *Energy and Environment Focus*. 4(1), 28-33. DOI: 10.1166/eef.2015.1135
 18. **Reza**, A., and Abedin, M. Z. (2011). Application of bioadsorbents for the wastewater treatment of a composite knit industry. *Journal of the Environment*. 8(1), 19-26.

Conference Proceedings

1. Shim, S., Kim, S., Lee, T., Jeon, T., Elinda, L., **Reza**, A., Won, S., and Ra, C. (2020). *Development of centralized livestock manure treatment facilities for improved nutrient cycling in the crop-livestock*

- farming system*. Proceedings of 2020 Annual Congress of Korean Society of Animal Science and Technology, Seoul, South Korea. Aug. 27-28, 2020.
2. Shim, S., Kim, S., Lee, T., Jeon, T., Elinda, L., **Reza, A.**, Won, S., and Ra, C. (2019). *Performance evaluation of phosphorus recovery process from swine manure in full-scale*. 9th International Conference on Engineering and Applied Science, Hawaii, USA. Aug. 06-08, 2019.
 3. Kim, S., Shim, S., Lee, T., Jeon, T., Elinda, L., **Reza, A.**, Won, S., and Ra, C. (2019). *Reduction of ammonia emission from swine farms using circulation type biological reactor*. 9th International Conference on Engineering and Applied Science, Hawaii, USA. Aug. 06-08, 2019.
 4. Shim, S., Kim, S., Kim, K., Shin, D., Anas, R. M., Lee, T., Jeon, T., **Reza, A.**, Won, S., and Ra, C. (2018). *Effects of solid concentration on P recovery process and struvite growth in biologically oxidized swine wastewater*. Asia-Pacific Conference on Engineering and Applied Sciences, Sydney, Australia. Dec. 18-20, 2018.
 5. Kim, S., Shim, S., Kim, K., Shin, D., Anas, R. M., Lee, T., Jeon, T., **Reza, A.**, Won, S., and Ra, C. (2018). *Ammonia reduction in swine barn via the circulation of liquid compost in slurry pit*. Asia-Pacific Conference on Engineering and Applied Sciences, Sydney, Australia. Dec. 18-20, 2018.
 6. Kamal, A. F. M., **Reza, A.**, Rahman, M. M., Islam M. M. and Aziz, K. M. S. (2018). *Scopes and Challenges of Hydro-Climatic Condition in Bangladesh: A Review Considering Natural Variability and Future Changes*. 13th International Knowledge Globalization Conference, Dhaka, Bangladesh. Feb. 23-25, 2018.
 7. **Reza, A.**, Islam, M. M., Jobayer, M. and Rahman, M. A. (2018). *Barriers to biodiversity conservation and sustainable development in Chittagong Hill Tracts of Bangladesh*. 13th International Knowledge Globalization Conference, Dhaka, Bangladesh. Feb. 23-25, 2018.
 8. **Reza, A.**, Eum, J., Jung, S., Choi, Y., and Kim, B. (2015). *Non-point source pollutants export from a sloping highland agricultural watershed in upper reaches of Lake Soyang, Korea*. In proceedings of 13th Joint Symposium of Kangwon National University and Tottori University on Environmental Issues. Tottori, Japan. Nov. 11-13, 2015.
 9. **Reza, A.**, Eum, J., Jung, S., Choi, Y., and Kim, B. (2015). *Nutrient budgets of a mixed land use watershed under monsoon climate impacted by intensive agriculture*. In proceedings of 12th Joint Symposium of Kangwon National University and Tottori University on Environmental Issues. Chuncheon, Republic of Korea. Jan. 06-08, 2015.
 10. **Reza, A.**, Choi, Y., Jung, S., and Kim, B. (2013). *Assessment of sediment phosphorus release from Lake Uiam, Korea*. In proceedings of 11th Joint Symposium of Kangwon National University and Tottori University on Environmental Issues. Tottori, Japan. Nov. 13-15, 2013.
 11. **Reza, A.**, and Yousuf, T. B. (2012). *Environmental impact assessment of dumping of Buriganga River waste and its possible mitigation*. In proceedings of 10th Joint Symposium of Kangwon National University and Tottori University on Environmental Issues. Chuncheon, Republic of Korea. Oct. 22-23, 2012.
 12. Yousuf, T. B. and **Reza, A.** (2013). *3R Action Plan: A targeted waste management solution for Bangladesh*. 3rd International Conference on Solid Waste Management in the Developing Countries. Khulna, Bangladesh. Feb. 10-12, 2013. (Paper Id. 122)
 13. **Reza, A.**, Yousuf, T. B., Abedin, M. Z. (2013). *Bagasse as an adsorbent for the wastewater treatment of a composite knit industry*. 3rd International Conference on Solid Waste Management in the Developing Countries. Khulna, Bangladesh. Feb. 10-12, 2013. (Paper Id. 126)
 14. Yousuf, T. B. and **Reza, A.** (2011). *E-Waste management in Bangladesh: present trend and future implication*. In proceedings of World Congress of International Solid Waste Association

(ISWA). EXCO Daegu, Republic of Korea. Oct. 17-20, 2011.

15. **Reza, A.**, Moniruzjaman M.A., Islam, M.A. and Bhuiyan, M.H.M.B. (2010). *Rooftop micro-food farm: an environmentally sustainable practice for urban agriculture*. In proceedings of Integrated Sustainable Solid Waste Management in Asia (ISSOWAMA), Dhaka, Bangladesh. Oct. 09, 2010.

Posters

1. Shin, D., Shim, S., Kim, S., Kim, K., Anas, R. M., Lee, T., Jeon, T., **Reza, A.**, Won, S., and Ra, C. (2018). *Biodegradation treatment of miscanthus compared to sawdust for the livestock bedding material*. 2nd International Conference on Bioresources, Energy, Environment, and Materials Technology, Hongcheon, Korea. Jun. 10-13, 2018.
2. Shim, S., Kim, S., Kim, K., Shin, D., Anas, R. M., Lee, T., Jeon, T., **Reza, A.**, Won, S., and Ra, C. (2018). *Struvite reutilization to remove the ammonia nitrogen in livestock manure*. 2nd International Conference on Bioresources, Energy, Environment, and Materials Technology, Hongcheon, Korea. Jun. 10-13, 2018.
3. **Reza, A.**, Eum, J., Jung, S., and Kim, B. (2016). *Influence of East Asian summer monsoon on suspended sediment and nutrient export from a pristine forested watershed*. Annual Conference on Environmental Research organized by Environment Research Institute, Kangwon National University. Chuncheon, Republic of Korea. Dec. 8, 2016.
4. Hahm, J., **Reza, A.**, and Kim, B. (2016). *Characteristics of woody debris export from a forested watershed*. 14th Joint Symposium of Kangwon National University and Tottori University on Environmental Issues. Chuncheon, Republic of Korea. Nov. 15-17, 2016.
5. Kim, B., Jung, S., Shin, M., Eum, J., Choi, Y., **Reza, A.**, and Lee, J. (2016). *The effects of Asian summer monsoon on algal blooms in reservoirs*. GLEON 18 All-Hands & NETLAKE Meetings, Lunz & Gaming, Austria. July 4-8, 2016.
6. Kim, D., Cha, S., **Reza, A.**, and Kim, B. (2016). *Responses of aquatic ecosystems in urban streams to weather condition (In-situ Monitoring)*. GLEON 18 All-Hands & NETLAKE Meetings, Lunz & Gaming, Austria. July 4-8, 2016.
7. **Reza, A.**, Eum, J., Jung, S., Choi, Y., and Kim, B. (2015). *Monitoring of water quality variation in an upstream mixed land use watershed under monsoon climate*. Annual Conference on Environmental Research organized by Environment Research Institute, Kangwon National University. Chuncheon, Republic of Korea. Dec. 9, 2015.
8. Cha, S., Kwon, S., Eum, J., **Reza, A.**, and Kim, B. (2015). *Influence of monsoon climate on water quality variation in a forested-agricultural watershed*. 13th Joint Symposium of Kangwon National University and Tottori University on Environmental Issues. Tottori, Japan. Nov. 11-13, 2015.
9. **Reza, A.**, Eum, J., Jung, S., Choi, Y., and Kim, B. (2014). *Phosphorus budget of a mixed land use watershed under monsoon climate impacted by intensive agriculture*. Annual Conference on Environmental Research organized by Environment Research Institute, Kangwon National University. Chuncheon, Republic of Korea. Dec. 12, 2014.

Research Projects (participated and ongoing)

- Ammonia removal and recovery from liquid dairy manure (03/2021 – till now)
- Reduction of odor emissions from swine farming practices using ICT (04/2020 – 02/2021)
- Development of guidelines for carcass disposal in Korea (04/2020 – 02/2021)
- Advanced treatment technologies for improved efficiency of nitrogen and phosphorus recovery

- process and precision control of livestock manure nutrient (04/2018 – 02/2021)
- Application of vegetable oil coated lime to improve bedding materials lifetime in Hanwoo cattle farms (10/2019 – 04/2020)
 - Estimation of greenhouse gas emissions from Hanwoo manure treatment procedure according to IPCC 2006 guideline (01/2019 – 12/2019)
 - Development of automatic diagnosis and control technology for livestock manure using ICT (04/2018 – 12/2019)
 - Development of farm level, regional and national nutrient management strategy (04/2018 – 12/2019)
 - Investigation of the soil improvement effect and development of utilization technology of Miscanthus to growth promotion of upland-field crop (04/2018 – 12/2018)
 - Education for sustainable development (04/2017 – 03/2018)
 - Study on seasonal and spatial variations of methane gas emission from a deep reservoir (11/2016 - 02/2017)
 - Monitoring and evaluation of runoff characteristics and woody debris export from a forested headwater watershed (05/2015 - 02/2017)
 - Survey on ecosystem structure of lakes in the upper region of the North Han River system (Korea) (05/2012 - 08/2016)
 - Advanced in-situ monitoring of urban streams (03/2014 - 08/2016)
 - Survey on ecological status of Han River (04/2016 - 08/2016)
 - Effects of alum treatment on water quality in Gamdon reservoir (06/2015 - 12/2015)
 - Monitoring of non-point source priority management region: The watershed of Lake Soyang (Korea) (05/2012 - 12/2014)
 - Developing tools for assessing lake ecosystem integrity (Korea) (05/2012 - 05/2014)
 - Assessment of distribution and potential pollution risk of phosphorus in the lake sediments (Korea) (06/2013 - 12/2013)
 - Cleaner and greener city: Dhaka (Bangladesh) (03/2010 - 03/2011)

Language and Computer Skills

Language

English (*fluent*), Bengali (*native*), Korean (*intermediate*)

Computer

Microsoft office, Sigma plot (*advanced*), Graph-pad Prism (*advanced*), SAS (*intermediate*), R (basic).

Trainings / Workshops

- Training on '*Application of R Program for Advanced Statistical Analysis in Agricultural Research*', organized by College of Agricultural Sciences, IUBAT—International University of Business Agriculture and Technology and supported by USAID-Funded Asia Farmer-to-Farmer (F2F) and Winrock International. Duration: 3 days (4-6 July, 2017).
- Training on '*Teaching-Learning, Curriculum Development and Student Assessment Exercise*', organized by Institutional Quality Assurance Cell (IQAC) of IUBAT—International University of Business Agriculture and Technology and supported by HEQEP UGC Sub-project: 3057. Duration: 4 days (06-09 September, 2017).

Fellowships / Scholarships / Grants / Awards

- 04/2018 – 02/2021: University-Industry Cooperation Foundation Postdoctoral Fellowship, Kangwon National University
- 09/2016 – 02/2017: University-Industry Cooperation Foundation Postdoctoral Fellowship, Kangwon National University
- 03/2012 – 12/2014: Bring Excellent Students to Kangwon National University (BEST-KNU) Scholarship
- 03/2010 – 03/2011: CityNet research Grant for the project 'Cleaner and greener city: Dhaka (Bangladesh)'
- 10/2010: 'Best Presenter Award', Integrated Sustainable Solid Waste Management in Asia (ISSOWAMA)

Professional Service and Other Appointments

Memberships

- Association of Environmental Engineering and Science Professors (AEESP)
- Global Lake Ecological Observatory Network (GLEON)
- International Society of Limnology (SIL)
- World Wide Opportunities on Organic Farms (WWOOF)
- Regional Centre of Expertise (RCE) Greater Dhaka

Journal Referee

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| • Scientific Reports | • Forests |
| • Science of the Total Environment | • Desalination and Water Treatment |
| • Ecological Indicators | • Journal of Asia-Pacific Biodiversity |
| • Ecological Informatics | • Egyptian Journal of Aquatic Research |
| • Water | • Hydrology |
| • Fisheries Management and Ecology | • Geosciences |
| • SN Applied Sciences | • Sustainability |
| • Journal of Soil Science and Plant Nutrition | • International Journal of Environmental Research and Public Health |