

# MOHAMMAD ALSHAWAF, PhD

Assistant Professor of Environmental Sciences  
Department of Environmental Sciences, College of Life Sciences  
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Environmental Sciences Professor with over 10 years of experience driving research, policy, and innovation across sustainability, resource management, and clean energy. Recognized for leading cross-disciplinary projects focused on circular economy, hydrogen energy, renewable desalination, and waste-to-energy strategies. Active contributor to international negotiations and advisory committees shaping environmental policy in the Gulf region. Frequently published in high-impact journals and invited to speak at global forums on energy transition, climate resilience, and environmental security. Adept at bridging academia, government, and industry to deliver actionable, research-based solutions.

## EXPERIENCE

<b>Acting Chairman, Department of Environmental Sciences</b> College of Life Sciences – Kuwait University	2021 – Present
<b>Team Member, Kuwait UN-INC Negotiation Team</b> Intergovernmental Negotiating Committee on Plastic Pollution	2024 – Present
<b>Committee Member, University Representative</b> Kuwait Petroleum Company and Kuwait University Agreement	2024 – Present
<b>Assistant Professor of Environmental Sciences</b> College of Life Sciences – Kuwait University	2014 – Present
<b>General Supervisor, Academic Accreditation Unit</b> College of Life Sciences – Kuwait University	2019 – 2024
<b>Consultant</b> Ministry of Water & Electricity – Kuwait	2021
<b>Environmental Engineer</b> Ministry of Oil – Kuwait	2005 – 2006

## EDUCATION

<b>Ph.D., Environmental Sciences</b> University of Massachusetts Boston	2009 – 2014
<b>LEED Green Associate Certificate</b> U.S. Green Building Council	2014
<b>M.Sc., Environmental Planning &amp; Management</b> Louisiana State University and Agricultural and Mechanical College	2006 – 2008
<b>B.Sc., Environmental Engineering</b> Louisiana State University and Agricultural and Mechanical College	2000 – 2005

## FELLOWSHIPS & INTERNSHIPS

<b>Research Fellow</b> Silesian University of Technology – Faculty of Energy and Environmental Engineering, Poland	May 2019
<b>Research Fellow</b> Oxford Institute for Energy Studies – Oxford, UK	June 2018 – September 2018
<b>Intern</b> Innovente, Inc. – Boston, USA <ul style="list-style-type: none"><li>Quantified organic waste sources in Massachusetts using ArcGIS.</li></ul>	January 2011 – May 2011
<b>Intern</b> Kuwait-MIT Center for Natural Resources <ul style="list-style-type: none"><li>Assessed the environmental benefits of reducing electric and water subsidies in Kuwait.</li></ul>	May 2009 – September 2009

## RESEARCH PROJECTS

**Prospects of Turquoise Hydrogen Production in Kuwait via Pyrolytic Gas Cracking: Catalyst Selection and Development in a Life Cycle Assessment** | Kuwait University Project ID RF01/23 Ongoing

**Roadmap to Waste Management and Circular Economy for Kuwait: Policy and Technical Challenges and Opportunities**  
Kuwait University Project ID FE01/20 2021 – 2023

## CONFERENCES & WORKSHOPS

### Oral Presentation

- **“Landfill gas emissions and energy recovery potential from MSW landfills in Kuwait”**  
The 8th International Conference on Green Urbanism – Rome, Italy Oct 2024
- **Eighth International Conference on Energy Research and Development**  
ASHRAE/KFAS – Kuwait Nov 2023
- **“An overview of the Challenges Associated with Renewable Energy Driven Desalination in the Middle East”**  
IDA Water & Climate Change – Spain Oct 2023
- **“Transitioning to a hydrogen economy: driving change through policy and regulations”**  
3rd KPC-JCCP Kuwait Hydrogen Symposium Jun 2023
- **“The pillars of energy security toward a sustainable future”**  
U.S.–Kuwait Business Pollution and the Climate–Energy–Health–Nexus: Sustainability in West Asia and the Arabian Peninsula – Tafahum Wa Tabadul Workshop by CARPO – Kuwait University Jun 2023
- **“Energy Security vs Energy Transition: A Zero-Sum Game?”**  
The NATO-ICI Regional Centre and the NATO Strategic Direction – Kuwait May 2022
- **“Security Roadmap for West Asia and the Arabian Peninsula”**  
Tafahum Project 3rd annual conference – By CARPO – Berlin, Germany Sep 2021
- **“Energy Transition and Climate Change, Challenges and Opportunities for the Gulf Region”**  
The Gulf Research Meetings (Online) – Workshop Director Jul 2021
- **“Academia and Industry: Bridging the Gap”**  
KFAS (Online) – as a Moderator Dec 2020
- **“Security Roadmap for West Asia and the Arabian Peninsula”**  
Tafahum Project 2nd annual conference (Online) Dec 2020
- **“The Green Investment”**  
A Kuwait Oil Company webinar Nov 2020
- **“Fundamentals of Energy Security”**  
Constructing a Regional Security Paradigm and Enhancing Parameters for Engagement by CARPO – The Hague, Netherlands Dec 2019

### Posters

- **“Methane Emission from Waste Disposal Sites in Kuwait”**  
Scientific Research Conference – Kuwait University Feb 2024
- **“A Preliminary Municipal Solid Waste Characterization and Circular Economy Potential in Kuwait”**  
Scientific Research Conference – Kuwait University Mar 2023
- **“The Role of Biomethane from Sewage Sludge in the Energy Transition: Potentials and Barriers in the Arab Gulf States Power Sector”**  
Scientific Research Conference – Kuwait University Mar 2022
- **“Estimating the Power Output of Variable Solar Energy Using a Monte Carlo Approach”**  
3rd Kuwait International Conference on Life Sciences – Kuwait Nov 2018
- **“The Temporal Trends of Dust Events in Kuwait: Preliminary Data Assessment”**  
Scientific Poster Day – Kuwait University Mar 2018

### Academic Workshops

- **West Asia Regional Foresight Workshop** – Kuwait University Nov 2023
- **Kuwait Hydrogen Valley** – Kuwait University and Embassy of Netherland in Kuwait Oct 2023
- **Regional Project Development within the Climate–Energy–Health–Nexus** – Sweden Mar 2023
- **Energy Transition** – Gulf Waste Management & Recycling Forum Feb 2023
- **Solid Waste Management** – Gulf Waste Management & Recycling Forum Feb 2023
- **CABI webinar: Journey to Publish** Jun 2020
- **Positive Education Training by Bareeq & KFAS** – Kuwait Oct 2017
- **Research Publication Workshop** by KFAS & UC Berkeley – Kuwait Oct 2017
- **Teaching Excellence Workshop** by Center for Teaching and Learning – UC Berkeley – Kuwait Mar 2017
- **Developing Competitive Research Proposals Workshop** by KFAS & AAAS – Kuwait Dec 2016

## PUBLICATIONS

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- Tuhl, A., Aleisa, E., **Alshawaf, M.**, & Al-Salem, S. M. (2025). Food waste valorization in the context of hydrogen recovery in the State of Kuwait. *Journal of Material Cycles and Waste Management*, 1–14. <https://doi.org/10.1007/S10163-025-02173-Z>
- **Alshawaf, M.**, van Haute, M., Alsayegh, O., Constantinou, A., Dewil, R., Bellotti, D., Barberis, S., Rivarolo, M., Magistri, L., Massardo, F., Al-Qassimi, M., & Al-Salem, S. M. (2025). Hydrogen energy prospects in Gulf Cooperation Council states: Opportunities and challenges. *Renewable and Sustainable Energy Reviews*, 212, 115421. <https://doi.org/10.1016/J.RSER.2025.115421>
- **Alshawaf, M.**, & Alhajer, N. S. (2024). Renewable energy-driven desalination for sustainable water production in the Middle East. *International Journal of Sustainable Engineering*, 17, 19–29. <https://doi.org/10.1080/19397038.2024.2394552>
- Alsanad, A., & **Alshawaf, M.** (2023). SARS-CoV-2 epidemic first wave: The impact of partial and complete lockdowns on road-deposited sediments in Kuwait. *Applied Ecology and Environmental Research*, 21(2), 1075–1094. [https://aloki.hu/pdf/2102\\_10751094.pdf](https://aloki.hu/pdf/2102_10751094.pdf)
- Hryb, W., **Alshawaf, M.\***, & Krysztofiński, P. (2023). A preliminary assessment of utilizing solid waste fractions as an agricultural growth medium in arid soils. *International Journal of Environmental Science and Development*, 14(3), 195–201.
- Alwaeli, M., **Alshawaf, M.**, & Klasik, M. (2022). Recycling of selected fraction of municipal solid waste as artificial soil substrate in support of the circular economy. *Archives of Environmental Protection*, 48(4), 68–77. <https://doi.org/10.24425/aep.2022.143710>
- Alhajer, N. S., Al-Fadhli, F. M., **Alshawaf, M.**, & Aly, A. (2022). An integrated framework for exploring the tradeoffs between cost-optimized fuel allocation and regional air quality impacts in a water-energy nexus infrastructure. *Environmental Science and Pollution Research*, 1–18. <https://doi.org/10.1007/S11356-022-20118-Z>
- Alolayan, M., Albarak, F., Abotalib, M., & **Alshawaf, M.** (2022). Reforming energy subsidy in Kuwait: Maximizing net benefits and equity compliance. *Kuwait Journal of Science*. <https://doi.org/10.48129/kjs.11837>
- **Alshawaf, M.**, Alsulaili, A., Alwaeli, M., & Allaqawi, H. (2021). The role of biomethane from sewage sludge in the energy transition: Potentials and barriers in the Arab Gulf States power sector. *Applied Sciences*, 11(21), 10275. <https://doi.org/10.3390/app112110275>
- Almutairi, A., & **Alshawaf, M.** (2021). Pan evaporation modeling with artificial neural network and multivariate nonlinear regression compared to empirical methods under an arid environment. *Indian Journal of Environmental Protection*, 5.
- **Alshawaf, M.**, Poudineh, R., & Alhajer, N. S. (2020). Solar PV in Kuwait: The effect of ambient temperature and sandstorms on output variability and uncertainty. *Renewable and Sustainable Energy Reviews*, 134, 110346. <https://doi.org/10.1016/j.rser.2020.110346>
- Alwaeli, M., & **Alshawaf, M.** (2019). Waste utilization in concrete technology as a substitute for natural aggregates in the context of circular economy: An overview. *19th International Multidisciplinary Scientific GeoConference SGEM 2019*, Vienna, Austria. <https://doi.org/10.5593/sgem2019V/4.2/S05.021>
- **Alshawaf, M.**, Poudineh, R., & Alhajer, N. S. (2018). Estimating the power output of photovoltaics in Kuwait using a Monte Carlo approach [Abstract]. *20th International Conference on Advanced Data Analytics for Energy, Environment, and Water*, Istanbul, Turkey. <https://publications.waset.org/abstracts/99078>
- **Alshawaf, M.**, Douglas, E., & Ricciardi, K. (2016). Estimating nitrogen load resulting from biofuel mandates. *International Journal of Environmental Research and Public Health*, 13(5), 478. <https://doi.org/10.3390/ijerph13050478>

## ADMINISTRATIVE RESPONSIBILITIES

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- Supervisor for M.S. students
- Member, Scientific Committee
- Member, Libraries Committee
- Member, Accreditation and Quality Assurance Committee
- Member, Laboratories Committee
- Department Representative, Kuwait Environmental Protection Authority
- Adviser, Student Environmental Club O2 and Earth Day (2016–2017)
- Member, Students and Course Schedule Committee
- Member, Contracts and Hiring Committee
- Member, Strategic Plan Committee, Kuwait University (2018–2022)

## CERTIFICATIONS & AFFILIATIONS

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- **LEED Green Associate Certificate** – U.S. Green Building Council (2014)
- **Member**, Kuwait Society of Engineers
- **Reviewer**, Elsevier Journals