

## Maha Halalsheh

---

### Address

Water, Energy and Environment Centre  
University of Jordan  
Queen Rania Al-Abdulla St.  
Amman-Jordan

Tel: + 962 6 5355000 ext. 23906  
Mobile: + 962 798221846

Email: [Halalshe@ju.edu.jo](mailto:Halalshe@ju.edu.jo)

### PROFILE

---

Maha Halalsheh specializes in Integrated Water Resources Management (IWRM) with a particular focus on biological wastewater treatment and reuse, sludge management, anaerobic digestion, and resource conservation. She is a highly motivated fundraising expert with a clear and strategic vision. With extensive experience in coordinating and executing applied research projects, she thrives under high workloads and consistently meets deadlines and objectives. Maha is adept at taking the initiative and collaborating as part of a team. Her strong communication and organizational skills further contribute to her success in achieving project goals.

### EDUCATION

---

- Ph.D. Environmental Engineering  
Thesis entitled: *Anaerobic Pre-Treatment of Strong Sewage  
A proper solution for Jordan*  
Wageningen University/ The Netherlands  
Wageningen, October 2002
- M.Sc. Environmental Engineering  
University of Jordan  
June 1996
- B.Sc. Civil Engineering  
University of Jordan  
June 1992

## EMPLOYMENT

---

- Associate Researcher at the Water, energy and Environment Centre/ University of Jordan
- 2015-2107 Wastewater treatment expert at GIZ. She worked on a project that was conducted jointly with Jordan Ministry of Water and Irrigation. The project focused on decentralized wastewater management as a measure for adaptation to climate change

## Languages

---

- Arabic                      Excellent
- English                     Very Good

## PREVIOUS RESEARCH AND CONSULTATION PROJECTS

---

Period	Brief description of the project
1999-2003	CORETECH project: development of cost effective reclamation for domestic wastewater and the appropriate reuse of treated effluent under semi-arid climate conditions. The project was funded by the EU-ENCAMED and was carried out with the cooperation of Wageningen University, the National Research/ Cairo-Egypt, Bier Ziet University/ Palestine
1997-2004	The Sail-Op project on 'Capacity Building on Wastewater Valorization for agricultural production in the Middle East Area by using low cost technologies. The project was funded by the Dutch government and is carried out with the cooperation of Wageningen University/ The Netherlands, The National Research Centre/ Cairo-Egypt, Bier Ziet University/ Palestine
2006-2008	Anaerobic wastewater treatment using Up flow Anaerobic Sludge Blanket – Digester system. The research was funded by the International Foundation for Science (IFS). The total budget of the project was 12,000 \$US. Dr. Maha Halalsheh was the principle investigator.
2007-2008	Characterization of septage discharging at Khirbit As-Samra treatment plant. The project was funded by the USAID. The aim of the project was to characterize septage and highlight the seasonal variations in its quality. The ultimate goal was to suggest the best feasible management option for septage. The total budget of the project was 27,000 \$US. Dr. Maha Halalsheh was the principle investigator.

2006-2009	Anaerobic sewage treatment for sustainable water reclamation in Jordan. The project was funded by the International Arid Land Consortium (IALC) and aims at developing low cost wastewater treatment technologies. The total budget of the project was 80,000 \$US. Dr. Maha Halalsheh was the principle investigator #2. Prof. Jim Field from University of Arizona was principle investigator #1.
2006-2010	Anaerobic treatment of domestic wastewater at low temperature in Jordan. The project is funded by the USAID and aims at better understanding of anaerobic digestion at low temperature. The total budget of the project was 78,000 \$US. Dr. Maha Halalsheh was the principle investigator.
2008-2010	Pathogens control in fresh crop, a vital tool for safe reuse of wastewater in agriculture. A project funded by the higher council for science and technology. The project is providing seed money for proposal writing. Dr. Maha Halalsheh is coordinating the project.
2011-2012	Piloting and strengthening adaptation to climate change in the Zarqa river basin. The project is funded by the UNDP and deals with decentralized sanitation systems for protecting ground water from pollution.
2011-2012	Al-Dier wastewater treatment plant: planning and preliminary design. The project is funded by UNICEF and deals with decentralized sanitation in Basra governorate/ Iraq.
2012-2014	Sludge management in Jordan. A project that is funded by Scientific Research Fund at Ministry of Higher Education. The total fund 204,000 JD.
2013-June	Upgrading Ain Al-Basha wastewater treatment plant. Freelancer for Orient Consultants. Consultancy work for Water Authority of Jordan. Total period of the study is 100 days. Main tasks are related to process engineering. Particularly to study alternatives for odour control at wastewater treatment plant; design a new primary clarifier; new thickener and expansion of the existing landfill.
2013-2015	Stakeholder analysis and pilot study for safe use of treated wastewater in agriculture. A project funded by the WHO with a total fund of 120,000 US\$. The project aims at development of a framework for sanitation safety plan according to WHO guideline published on 2006.
2009-2015	Integrated Water Resource Management Masters program. Acting

as a member of coordination team of the project. The project was funded by DAAD and coordinated jointly together with Cologne University of Applied Sciences.

2018-2022	CEOMED project (employing circular economy approach for OFMSW management within the Mediterranean countries). The project is funded by EU with a total budget of 3.1 million Euros. Partner countries are Spain, Italy, Jordan, and Tunisia. Halalsheh is a research team member
2021-2022	Prototyping of pyrolysis technology for sewage sludge utilization. A project funded by the GIZ to produce high quality biochar
2022- 6 months	Characterization of septage in Azaraq Camp. The service is provided for the GIZ with intensive analysis program. Halalsheh was coordinating the project
2022-2026	WATERUN project: Innovative methodology to prevent and mitigate diffuse pollution from urban water runoff. EU-project
2023-2026	3S-WATER project: Sustainable small-scale water systems-integrating local knowledge and co-learning for preserving aquatic ecosystems and improving quality of life. A project funded by the Dutch government with partners from The Netherlands, India and Maldives
2023-2026	ANAJO project: deals with piloting integrated anaerobic-aerobic wastewater treatment. The project is conducted jointly with Technical University of Berlin
2023-2024	Selenium in the Dead Sea GW Basin: a study conducted for Miyahuna to investigate Se sources in Hidan well-field

## **PUBLICATIONS**

---

1. Obeidat, N., Shatanawi, K., Kassab, G., Halalsheh, M. (2024). Performance of decentralized wastewater treatment system employing Upflow anaerobic sludge blanket and vertical flow constructed wetland. *Case Studies in Chemical and Environment Engineering* 9, 100695.
2. Halalsheh, M., Shatanawi, K., Shawabkeh, R., Kassab, G., Mohammad, H., Adawi, M., Ababneh, S., Abdullah, A., Ghantous, N., Balah, N., Almomani, S. (2024). Impact of temperature and residence time on sewage sludge pyrolysis for combined carbon sequestration and energy production. *Heliyon* 10 (7), DOI:10.1016/j.heliyon.2024.e28030

3. Abu-Dalo, M., Abu-Dalo, D., Halalsheh, M., Al Bawab, A. (2024). Olive mill wastewater treatment using vertical flow constructed wetlands (VFCWs). *BMC chemistry* 18 (1), 234. <https://doi.org/10.1186/s13065-024-01348-3>
4. Mohammad, AH., Odeh, T., Abualhijaa, M., Shatanawi, K., Halalsheh, M. (2024). Application of the fuzzy analytic hierarchy process for water resources in the Wadi AlHasa catchment, Jordan. *Journal of Water and Land Cover*, 60 (I-III): 100-111, DOI:10.24425/jwld.2024.149112
5. Shatanawi, K., Mohammad, A.H., Odeh, T., Arafeh, M., Halalsheh, M., Kassab, G. (2022). Analysis of historical precipitation in semi-arid areas- case study of the Amman-Zarqa basin. *Journal of Ecological Engineering*. 23(8), 101-111. <https://doi.org/10.12911/22998993/150616>
6. Mohammad, A.H., Odeh, T., Halalsheh, M., Shatanawi, K. (2021). Detecting land use/cover dynamics and land suitability mapping for Irbid governorate using an integrated approach: *Journal of Environmental Engineering and Landscape Management*. 29(3): 263-272. <https://doi.org/10.3846/jeelm.2021.15150>
7. Amerasinghe, P., Amoah, P., Bastos, R., Husman, A.M.de R., Faour-Klingbeil, D., Fout, S., Gin, K., Halalsheh, M., Korsten, L., Shaheen, M.N.F. (2021). Safety and quality of water used with fresh fruits and vegetables. *FAO and WHO microbiological risk assessment series No.37*. Rome.
8. Halalsheh, M., Kassab, G., Shatanawi, K. (2021). Impact of legislation on olive mill wastewater management: Jordan as a case study. *Water Policy*, 23(2): 343-357. <https://doi.org/10.2166/wp.2021.171>
9. Amerasinghe, P., Amoah, P., Bastos, R., Husman, A, R., Klingbeil, D. F., Fout, S., Gin, K., Halalsheh, M., Korsten, L., Shaheen, M. N.F. (2021). Safety and quality of water used with fresh fruits and vegetables. *FAO and WHO. Microbiological Risk Assessment Series No. 37*. Rome. <https://doi.org/10.4060/cb7678en>
10. Kassab, G., Khater, D., Odeh, F., Shatanawi, K., Halalsheh, M., Arafah, M., Van Lier, J. (2020). Impact of nanoscale magnetite and zero valent iron on the batch-wise anaerobic co-digestion of food waste and waste-activated sludge. *Water*, 12, 1283; doi:10.3390/w12051283
11. Shanna N. McClain, McMullen, C.P., Abiodun, B.J., Armiento, G, Bailey, R., Balasubramanian, R., Barra, R., Bowen, K. J., Crump, J., Dankelman, I., DePryck, K., Djalante, R., Dutta, M., Gemenne, F., Godfrey, L., Grellier, J., **Halalsheh, M.**, Hurley, F., Iraola, M. J., King, R., Kirilenko, A., Lei, S., Lemke, P., Liggett, D., Lucas, R., Lucon, O. D. S., Lyne, K., Martino, D., Ritu Mathur, R., Mullaney, E. G., Perch, L. N., Rieckmann, M., Sándor, F., Savino, A., Schandl, H., Scholtens, J., Schwerdtle, P. N., Seager, J., Thomalla, F., Wellesley, L., Wright, C. Y., Zenghelis, D. A., Zickgraf C. (2019). *Cross-cutting Issues, Chapter 4, Global Environment Outlook (GEO-6)*. [https://wedocs.unep.org/bitstream/handle/20.500.11822/27661/GEO6\\_CH4.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/27661/GEO6_CH4.pdf?sequence=1&isAllowed=y)

12. Halalsheh, M; Kassab, G. (2018). Policy and governance framework for wastewater irrigation: Jordanian Experience. Book chapter: Safe use of wastewater in agriculture: from concept to implementation. Springer Nature. ISBN: 978-3-319-74267-0
13. Halalsheh, M., Kassab, G., Shatanawi, K; Shareef, M. (2018). Development of sanitation safety plans to implement world health organization guidelines: Jordanian experience. Book chapter: Safe use of wastewater in agriculture: from concept to implementation. Springer Nature. ISBN: 978-3-319-74267-0
14. Telfah, D., Halalsheh, M., Ribbe, L., Roth, G. (2017). Performance assessment of commercial principles in water services provision. Proceedings of water resources management conference organized by Wessex Institute. 18-20 July, Prague, Czech Republic.
15. Halalsheh, M. (2016). Selected case studies on water-energy-food nexus. Background document and policy briefs prepared for the project entitled: Building awareness for interlinked supply risks: The Water Energy and Food Nexus in the Arab Region. Series of strategic policy briefs for policy makers. Arabian Gulf University (AGU), League of Arab States (LAS), and GIZ program: Adaptation to climate change in the Water Sector in the Arab Region (ACCWaM).
16. Busche, D. and Halalsheh, M. (2015). Coordination between research and implementation in Integrated Water Resources Management- Jordan as a case study. Social water studies in the Arab Region: State of the Art and perspectives. Edtrs. Fayyad, M., Sandri, S., Weiter, M., Zikos, D. ISBN: 3-936602-74-3.
17. Halalsheh, M., Kassab, G., Abu Ghunmi, L., Hamaideh, A. (2014). Towards anaerobic wastewater treatment at low temperature: effect of temperature shift on anaerobic digestion. Proceedings IWA specialized conference- Global challenges: Sustainable wastewater treatment and resource recovery. 26-30 October, Kathmandu, Nepal.
18. Kassab, G., Halalsheh, M., Abu-Ghunmi, L., Shatanawi, K. (2013). Characterization and anaerobic biodegradation of single house wastewater. Jordan Journal of Civil engineering. Vol. 7, No. 2, pp 202-210.
19. Halalsheh, M., Kassab, G., Yazjeen, H., Qumsieh, S., Field, J. (2011). Effect of increasing the surface area of primary sludge on anaerobic digestion at low temperature. Bioresource Technology, 102(2), 748-752.
20. Halalsheh, M., Noaimat, H., Yazajeen, H., Cuello, J., Freitas, B., Fayyad, M. (2011). Biodegradation and seasonal variations in septage characteristics. Journal of Environmental Monitoring and Assessment. Volume 172 (1), pp. 419.

21. Halalsheh, M., Muhsen, H., Shatanawi, K., Field, J. (2010). Improving solids retention in up flow anaerobic sludge blanket reactors at low temperatures using lamella settlers. *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances and Environmental Engineering* 45(9), 1054-1059.
22. Kassab, G., Halalsheh, M., Klapwijk, A., Fayyad, M., van Lier, J. (2010). Sequential anaerobic-aerobic treatment for domestic wastewater- A review. *Bioresource Technology* 101, pp. 3299-3310.
23. Sawajneh, Z., Omari, A., Halalsheh, M. (2010). Anaerobic treatment of strong sewage by a two stage system of AF and UASB reactors. *Water Science and Technology* 61 (9), pp. 2399-2406.
24. Halalsheh, M., Abu Rumman, Z., Field, J. (2010). Anaerobic wastewater treatment of concentrated sewage using a two stage up flow anaerobic sludge blanket- anaerobic filter system. *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances and Environmental Engineering*, 45 (3).
25. Rojouli, M., Halalsheh, M., Fayyad, M. (2009). Anaerobic filter for polishing effluent of UASB reactor treating strong sewage at  $23^{\circ}\text{C}$ . *Water Science and Technology* 59(10), 1975-1981.
26. Halalsheh, M., Abu Ghunmi, L., Al-Alami, N., Fayyad, M. (2008). Fate of pathogens in tomato plants and soil irrigated with secondary treated wastewater. *Proceedings of international IWA conference on new sanitation concepts and models of governance*. May 19-21. Wageningen- The Netherlands.
27. Halalsheh, M., Wendland, C. (2008). Integrated anaerobic-aerobic treatment of concentrated sewage. In: *Efficient management of wastewater, its treatment and reuse in water scarce countries*. Edited by Al-Baz, I., Otterpohl, R. and Wendland, C. Springer publication, pp. 177-187.
28. Halalsheh, M., Dalahmeh, S., Sayyed, M., Suleiman, W., Shareef, M., Mansour, M., Safi, M. (2008). Grey water characteristics and treatment options for rural areas in Jordan. *Bioresource Technology* 99, 6635-6641.
29. Al-Jabi, L.F., Halalsheh, M., Badarneh, D. (2008). Conservation of ammonia during food waste composting. *Environmental Technology* 29 (10), 1067-1073.
30. Halalsheh, M., van Lier, J. (2006). Capacity building on wastewater valorization for agricultural production in the Middle-East area by using low cost treatment technologies. *Capacity Building for Sustainable Development: sharing innovative experiences*, Volume 14, chapter 11. Published of TWAS and UNDP.
31. Halalsheh, M. (2005). Wastewater treatment and reuse in Amman-Zarqa basin. Report prepared for the MEDITATE-EU project.

32. Halalsheh, M., Kassab, G., Fayyad, M. (2005). Uses of treated sludge in agriculture: organic pollutants perspective. Proceedings to the first international conference on sustainable urban wastewater treatment and reuse (SUWTR). Nicosia, Cyprus, Sept. 15-16.
33. Halalsheh, M., Sawajneh, Z., Zu'bi, M., Zeeman, G., van Lier, J., Fayyad, M., Lettinga, G. (2005). Treatment of strong domestic sewage in a 96 m<sup>3</sup> UASB reactor operated at ambient temperatures. Two stage versus one stage UASB reactor. *Bioresource Technology* (96) 577-585.
34. Halalsheh, M., Koppes, J., Den Elzen, J., Zeeman, G., Fayyad, M., Lettinga, G. (2005). Effect of SRT and temperature on biological conversions and the related scum forming potential. *Wat. Res.* (39) 2475-2482.
35. Halalsheh, M., Smit, T., Kerstens, S., Tissingh, J., Zeeman, G., Fayyad, M., Lettinga, G. (2004). Characteristics and anaerobic biodegradation of sewage in Jordan. Proceedings of the 10<sup>th</sup> Anaerobic digestion conference in Montreal, Canada between 28<sup>th</sup> August and 2<sup>nd</sup> September.
36. Halalsheh, M., Kerstens, S., Zeeman, G., van Lier, J., Fayyad, M., Lettinga, G. (2004). Treatment of strong domestic sewage using a two stage AF/UASB system and a one stage UASB reactor. Proceedings of the 10<sup>th</sup> Anaerobic digestion conference in Montreal, Canada, August 28- Sept. 2<sup>nd</sup>.
37. Halalsheh, M., Sawajneh, Z., Salhi, A., Omari, A. and Fayyad, M. (2004). AF/UASB and UASB/AF systems for strong sewage treatment. Proceedings of the 10<sup>th</sup> worlds congress on Anaerobic Digestion. Aug. 29-Sept. 2. Montreal, Canada.

## **BOOKS AND DOCUMENTARIES**

---

1. Halalsheh, M., Zeeman, G., van Lier, J., Lettinga, G. Anaerobic treatment of strong sewage. Published by VDM Verlag Dr. Muller Aktiengesellschaft & Co. Kg (Germany), 2010. ISBN: 9783639154764.
2. Decentralized Wastewater Management for Rural Communities. A short documentary that was prepared under IWRM and presenting a successful case on decentralized wastewater management options in the North Badia of Jordan. The movie was directed by Simon Kuttnick.
3. Documentary script on safe use of reclaimed water in agriculture. Under preparation for the WHO (2014).
4. Authorship of GEO 6 assigned by UNEP for the period 2016-2018.

## **HONORS, MEMBERSHIP OF PROFESSIONAL SOCIETIES**

---

1. Member of the Board of Civil Engineers at Jordanian Engineering Association



2. Honor by the Royal Scientific Society-Jordan on the work done for the project Integrated Wastewater Management Policies & Technologies for Marginal Communities in Jordan.
3. Member of coordinating committee of the Integrated Water Resources Management MSc program. A program funded by the German government and conducted in cooperation with Cologne University (2009-2015).
4. Member of sludge committee formed by the prime minister (October, 2014)
5. Member of the higher water committee of Water Authority of Jordan since 2015.
6. Member of NICE steering committee at the Jordanian MWI on implementation of decentralized wastewater concepts.
7. Member of the organizing committee of the 6<sup>th</sup> International Civil Engineering conference held in Amman on March 10-12, 2015.
8. Chair of Water and Environment Committee at Jordanian Engineering Association starting 2016 until now.
9. Certified trainer by Jordanian Vocational Training Corporation, 2015.
10. Member of the CEWAS steering committee on sustainable sanitation since October 2017
11. Member of the second state of environment report committee at the Ministry of Environment (2014-2016)
12. Member of elected commission of the general assembly at the Jordan's Engineers Association 2018-2021
13. Member of organizing committee of the 8<sup>th</sup> Civil Engineering Conference organized by JEA to be held in Amman on March 2020.
14. Member of the scientific committee of the 16<sup>th</sup> IWA World Conference on Anaerobic digestion to be held in Delft/ The Netherlands between 23-27 June 2019
15. Member of the organizing committee of the 5<sup>th</sup> IWA International Symposium on water and wastewater technologies in ancient civilizations: evolution of technologies from prehistory to modern times. The conference will be held on September 11<sup>th</sup> to 13<sup>th</sup>, 2019