

# Curriculum Vitae

## Maha Halalsheh

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### 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

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Maha Halalsheh works in the field of Integrated Water Resources Management (IWRM) with special interests in biological wastewater treatment, sludge management, anaerobic digestion and resource conservation. She is also a motivated fundraising expert with a strong vision. She has long experience in coordinating and executing applied research projects and can work effectively under high load. She is able to use her own initiatives and work as part of a team to meet deadlines and objectives. She also has good communication skills and organizational skills needed to succeed.

### EDUCATION

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- 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

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- Associate Researcher at the Water, energy and Environment Centre (WEEC)/ 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 in Jordan

## Languages

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- Arabic                      Excellent
- English                     Very Good

## PREVIOUS RESEARCH AND CONSULTATION PROJECTS

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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 (10 months) Consultant for ISSRAR project: Innovative sanitation solutions and reuse in arid regions. The project is implemented by a consortium formed by BORDA (German) and seecon (Swiss) NGOs and is funded by Swiss Agency for Development and Cooperation (SDC).
- 2018- 3 months Consultant for BDO to conduct a feasibility study for grey water reuse project implemented by the World Vision (WV) in different governorates in Jordan.
- 2018-6 months WEEPros consultant to conduct a study on reuse of treated wastewater and sludge at national scale in Jordan. The study is conducted for NICE office at the Ministry of Water and Irrigation.
- 2019- 6 months WEEPros consultant to conduct training to GIZ Syria on wastewater treatment plants design and wastewater treatment plants management
- 2019-2 months GOPA consultant to introduce OHS measures into wastewater treatments in the wastewater treatment plants operated by YWC
- 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. I am a member of the research team from Jordan.
- 2018-2021 Consultant for ACWUA on REWATER project with the main task of training on wastewater treatment and sanitation safety planning.

## **PUBLICATIONS**

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1. 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
2. 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)

3. 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
4. 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
5. 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.
6. 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).
7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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).
16. Rojoui, 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.
  17. 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.
  18. 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.
  19. 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.
  20. Al-Jabi, L.F., Halalsheh, M., Badarneh, D. (2008). Conservation of ammonia during food waste composting. *Environmental Technology* 29 (10), 1067-1073.
  21. 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.
  22. Halalsheh, M. (2005). Wastewater treatment and reuse in Amman-Zarqa basin. Report prepared for the MEDITATE-EU project.
  23. 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.
  24. Halalsheh, M., Sawajneh, Z., Zu'bi, M., Zeeman, G., van Lier, J., Fayyad, M., Lettinga, G. (2005). Treatment of strong domestic sewage in a  $96\text{ m}^3$  UASB reactor operated at ambient temperatures. Two stage versus one stage UASB reactor. *Bioresource Technology* (96) 577-585.
  25. 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.
  26. 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.
  27. 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>.
  28. 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**

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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**

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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

## **TEACHING AND TRAINING EXPERIENCE**

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1. Solid waste management (MSc course)/ University of Jordan
2. Sanitation and public health (MSc course for the integrated water resource management program/ University of Jordan
3. Short course on anaerobic wastewater treatment technologies. Rabatat, Morocco, May 10-21, 2004
4. Short course on the operational principles and safety measures of wastewater treatment plants. The course targeted engineers from the Water Authority of Jordan and was held in Al-Albait University on Sept. 7 and Sept. 21, 2005.
5. Short course on low cost treatment technologies and anaerobic digestion of sludge. The course targeted Iraqi engineers and was held for Engicon August 15,26 (2007).
6. Short course on the operation of drinking water treatment plants. The course targeted technicians working for Miyahuna (Water company) and was held on Dec., 2008.
7. Short course on membrane technology for water treatment. The course targeted engineers of Miyahuna and was held on Dec., 2008.
8. Short course on Industrial wastewater management. The course included how to formulate standards and deal with industries. It also included industrial biological wastewater treatment. The course targeted Engineers from Miyahuna and was held in the period August 9-13, 2009.
9. Short course on wastewater treatment. The course targeted Iraqi engineers and funded by UNICEF. The course was held at the University of Jordan in the period April 25- May 12, 2010.
10. Trainer on a workshop entitled: safe use of wastewater in agriculture. The workshop was organized UNU-Floris jointly with Shahid Beheshti University, the National Water and Wastewater Engineering Company and the government of Iran. The workshop was conducted in the period December 5-7, 2016 in Shahid Beheshti University, Tehran, Iran.
11. Trainer on sanitation safety planning manual in a regional workshop organized by the WHO in Amman between 24<sup>th</sup> to 27<sup>th</sup> of July, 2017

## **Scientific Evaluation**

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1. Evaluator for the scientific proposals applied to Jordan Environment Fund, November, 2011. The fund was established by the Jordanian Ministry of Environment.
2. Evaluator for applications for Award on wastewater agricultural reuse on February, 2012. The award was announced by Arab Organization for Agricultural Development.
3. Reviewer for different scientific journals in the field of wastewater treatment and anaerobic digestion.



## CONFERENCES

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1. International WIMEK congress. Options for closed water systems. Sustainable water management. Wageningen/ The Netherlands. 1998 March 11-13.
2. International symposium on low cost wastewater treatment and reuse. Cairo-Egypt, 2001 Feb. 3-4.
3. Tenth anaerobic digestion congress. Montreal, Canada, 2004, Aug. 28<sup>th</sup> to Sept. 2<sup>nd</sup>
4. Med-Reunet II workshop on Mediterranean experiences on water reuse. Workshop at Agbar foundation, Barcelona, Spain. 2005, May 12-13.
5. First International conference on sustainable urban wastewater treatment and reuse (SUWTR). Nicosia, Cyprus. 2005, Sept. 15-16.
6. Regional EMWATER conference on efficient management on wastewater treatment and reuse in Mediterranean countries. 2006, Oct. 30.
7. International workshop on capacity building for sustainable development. The workshop was organized by the Third World Network for Scientific Organizations (TWNSO), The United Nations University, Institute of Advanced Studies (UNU/IAD) and the United Nations Development Program's special unit for south-south cooperation. Trieste-Italy, 2006 Oct. 10-13.
8. Expert group meeting on 'Municipal wastewater use in irrigation. Water and Environment Centre. San'a-Yemen, 2006, Nov. 4-7.
9. Sustainable management of wastewater for agricultural production in water scarce countries. Aleppo- Syria, 2007, Nov. 11-15.
10. International conference on Sanitation challenges. Wageningen- The Netherlands. 2008, May 19-21.
11. International conference on Imar Gaza. Istanbul- Turkey. 2009 Jun, 16-18.
12. ACWUA's first international conference on "cost recovery at water and wastewater utilities: achievements, challenges and solutions". And the Arab Water week. Dec. 5-9, 2010.
13. Arab American Frontiers of Science, Engineering and Medicine (2011). Organized jointly between NAS and KISR and held in Kuwait October 17-19, 2011
14. الملتقى الدولي حول البيئة في الإسلام وفي الدراسات الإسلامية المعاصرة. الجزائر 28-31 آذار 2011. مداخلة حول إدارة المياه والمياه العادمة في قطاع غزة.
15. 13 World congress on Anaerobic digestion: recovering bio-resources for the world (2013). IWA congress organized in Santiago De Compostela, Spain, 25-28 June, 2013.
16. IWA specialized conference- Global challenges: Sustainable wastewater treatment and resource recovery. 26-30 October, Kathmandu, Nepal.
17. SWIM-Sustain Water MED Conference 'Sustainable Integrated Wastewater Management in the Mediterranean'(2014). Sharm El Sheikh, Egypt on the 1<sup>st</sup> and 2<sup>nd</sup> of December.
18. 2<sup>nd</sup> Symposium: Arab American Frontiers of Science, Engineering and Medicine (2014). Held on December 13 to 15, 2014, in Muscat, Oman in partnership Between NAS and [The Research Council \(TRC\)](#) of Oman.
19. Participant in ACWUA workshop on training of trainers: how to conduct training. February 18,19,20 and 22, 2015.
20. Organizer of a workshop on frame work for sanitation safety plan for agricultural wastewater use. February 22-23, 2015.

21. Presenter in the regional workshop on Biosolids use in Land application. USAID water reuse and environmental conservation project. March, 9-10, 2015.
22. Presenter and moderator at MEDREC workshop organized on integrated decentralized wastewater management for resource recovery in rural and peri-urban areas. The workshop was held in Amman on May 10, 2018
23. Trainer on chemical and biological analysis for wastewater course organized by the training centre at the Jordan Engineers Association and targeted Saudi Engineers from governmental sector. The training course was conducted in Amman for two weeks starting March 18<sup>th</sup>, 2018