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EDUCATION

1994	Ph.D.	Water and environmental sciences	FSSM, University of Cadi Ayyad
1987	Diploma of Higher Studies	Wastewater Treatment & Reuse	FSSM, University of Cadi Ayyad
1984	Master degree	Water Sciences	FSSM, University of Cadi Ayyad
1983	Bachelor	Biology-Geology	FSSM, University of Cadi Ayyad

PROFESSIONAL POSITIONS

2007- 2023	Director of the National Center for Studies and Research on Water and Energy, University of Cadi Ayyad, Marrakech, Morocco		
2001- 2016	National Coordinator of the Pole of competences on “water and Environment” (PC2E), Focal point at Faculty of Sciences Semlalia, University of Cadi Ayyad, Marrakech, Morocco		
2005 -2010	Coordinator of the bachelor Degree on “Sanitation management in urban areas” at the Faculty of Science Semlalia (University of Cadi Ayyad) in partnership with Veolia Water & University of Limoges (France)		
1998-2023	Full Professor, Department of Biology, Faculty of Sciences Semlalia, UCA, Marrakech		
1994-1998	Associate Professor, Department of Biology, Faculty of Sciences Semlalia, UCA, Marrakech		
1987-1994	Assistant Professor, Department of Biology, Faculty of Sciences Semlalia, UCA		

RELEVANT EXPERIENCE IN THE EVALUATION

Type of project	Year	Nature of work and requesting
BONEX PRIMA Project (Boosting Nexus Framework Implementation in the Mediterranean), EU Research Programme H2020	2023-2025	Member of the BONEX External Advisory Board ; coordinated by BIOAZUL (Spain)
PHEMAC PRIMA Project (Participatory Hub for effective mapping, acceleration, and capitalisation of EU-MPC NEXUS best practices), EU Research Programme H2020	2020-2023	Member of the PHEMAC External Advisory Board ; coordinated by University of Barcelone (Spain)
Projects on priority areas of scientific research and technological development (Domain Water and Environment)	2014-2017	Evaluation requested by the National Centre for Scientific and Technical Research (CNRST, Morocco)
MedSpring EU project (Mediterranean Science, Policy, Research & Innovation Gateway)	2013-2018	Evaluation of project deliverables as a member of the quality control group; requested by CIHEAM-MAIB, Italy
Evaluation of research projects on wastewater treatment	2012-2013	ANR (National Agency for Research, France)
MIRA EU Project (Mediterranean Innovation and Research) Coordination Action	2011-2013	Preparing the WP7 report (Mediterranean countries Survey on Sea Water Contamination Research and

		Monitoring actions); Instituto de Diagnóstico Ambiental y Estudios del Agua, CSIC, Spain
Evaluation of the SWIM project on Integrated water resources management in the Sous Massa basin (Morocco)	2008	Expertise requested by US-AID (US Agency for Development)
Accreditation of laboratories and research teams	2005	Member of the evaluation committee, University of Cadi Ayyad
5th, 6th and 7th European Framework Program R&D projects	2000-2010	Assessment requested by the Research Directorate (European Commission)
Feasibility study of the treatment and reuse of wastewater at Ouled Teima, Morocco	1998	Expertise requested by US-AID (US Agency for Development)

RELEVANT EXPERIENCE IN MANAGEMENT AND COORDINATION OF R&D PROJECTS

International Projects

1. MELIA Project, INCO-MED (6PCRD), 2006-2011, Mediterranean Dialogue on Integrated Water Management. www.meliaproject.eu (Local coordinator)
2. PURATREAT Project INCO-Med (6PCRD), 2005-2009, New Energy Efficient approach to the operation of Membrane Bioreactors for Decentralized Wastewater Treatment, www.puratreat.com (Local coordinator)
3. SOWAEUMED Project, REGPOT (7PRD), 2009-2012, Network in solid waste and water treatment between Europe and Mediterranean countries. <http://grupsderecerca.uab.cat/sowaeumed> (Local coordinator)
4. WATERBIOTECH Project : Biotechnology for Africa's sustainable water supply AFRICA-2010 7PCRD FP7 (n° 265972) (2011-2014), Moroccan Team leader (www.waterbiotech.eu) .
5. TREASURE 2 Project : Treatment and Sustainable Reuse of Effluents in semiarid climates Moroccan Team leader, (<http://project.inria.fr/treasure/>) (2012-2014)
6. Project of bilateral cooperation Morocco-Spain AP/040128/11 : Preparatoriade un proyecto para la transferencia de tecnologia y refuerzo institucional en tecnicas de control y tratamiento de aguas industriales ; 2012-2013. Moroccan Team leader
7. Project of bilateral cooperation Morocco-France for restructured poles of excellences (Pôle PC2E). Treatment of OMW by membrane bioreactors. 2012- 2014.
8. NORIA Tempus Project: Strengthening innovation strategy and improving the technology transfer in the water technology sector of Morocco, European commission Tempus-Grant agreement n°530366-TEMPUS-1-2012-3020/001-001, 2012-2015. <http://noria.atika.um.es> (Local coordinator)
9. IRRIGATIO (Assessing the chemical/ microbiological contamination and productivity in the agricultural production chain of model fruit species grown under irrigation with different kinds of reclaimed wastewater) ERANETMED 2014 CALL, 2016-2019. <http://irrigatioproject.eu/>
10. FRAME (Development of the frame conditions for the establishment of an innovative water technology which couples anaerobic wastewater treatment and biomass production in a bioreactor in the Mediterranean region) ERANETMED3-075 EU Project.2017-2019. (Local coordinator)
11. Project of bilateral cooperation Morocco-France. Development of a hybrid electrochemical / adsorption process based on olive pits to treat and recover liquid effluents from the olive industry. Toubkal/19/84-Campus France: 41525VG.2019-2021
12. Project of bilateral cooperation Morocco-Tunisia (PR&D). Pluie Solide pour Pallier à la Sècheresse (2xPS) 2021-2023. (Coordinator)

National Projects

1. Evaluation of the Impact of mining waste on the quality of water resources and environment in Morocco, 2011-2014, funded by CNRST Morocco.
2. Treatment and Recovery of Industrial Effluents.2012-2014 funded by CNRST Morocco.
3. Ecological project for the treatment and reuse of wastewater from the Faculty of Law's annex by a green biotechnology "Made in UCAM".2017 funded by Cadi Ayyad university.

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS

Organization	Year	Position
International Water Association (IWA)	2023-	Fellow
Middle East and North Africa Network of Water Centres of Excellence (MENA NWC)	2014-2016	Governing member
Water and Sanitation for Africa (WSA) Pan African Inter-governmental Agency	2014-2017	Member of the Technical Advisory Committee
Regional Observatory of the environment and sustainable development (OREED)	2010-2014	Member of the Steering Committee
Association of Environmental Economics (EcoEnv)	2008-	Founding Member and Member of the Board
Junior Enterprise Cadi Ayyad association (JECA)	2008-2016	Founding Member and Member of the Board
Tensift Regional Centre of Development (CDRT-NGO recognized as public utility association)	2000-2002 2003-2024	Vice president Member of the Board

PUBLICATIONS (2019-2023)

(<https://scholar.google.com/citations?user=AASAUZAAAAAJ&hl=fr>)

- K. Zidan, Mandi, L., Hejjaj, A., Ouazzani, N., & Assabbane, A. 2024. Soil fertility and agro-physiological responses of maize (*Zea mays*) irrigated by treated domestic wastewater by hybrid multi-soil-layering technology. *Journal of Environmental Management*, 351, 119802. <https://doi.org/10.1016/j.jenvman.2023.119802>
- El Alaoui El Fels, A., Mandi, L., Kammoun, A., Ouazzani, N., Monga, O., Hbid, M.L. 2023. Artificial Intelligence and Wastewater Treatment: A Global Scientific Perspective through Text Mining. *Water* 2023, 15, 3487. <https://doi.org/10.3390/w15193487>
- Fdil, J.; Zhou, X.; Ahmali, A.; El Alaoui El Fels, A.; Mandi, L.; Ouazzani, N. 2023. Effect of Alternating Well Water with Treated Wastewater Irrigation on Soil and Koroneiki Olive Trees. *Water* 2023, 15, 2988. <https://doi.org/10.3390/w15162988>
- K. Zidan, L. Mandi, A. Hejjaj, S. Sbahi, A. El Alaoui El Fels, N. Ouazzani, A. Assabbane,. 2023. Efficiency of a new hybrid multi-soil-layering eco-friendly technology for removing pollutants from domestic wastewater under an arid climate. *Journal of Water Process Engineering*, 51, 103482. <https://doi.org/10.1016/j.jwpe.2022.103482>
- I. Haydari, K. Aziz, S. Kaya, T. Daştan, N. Ouazzani, L. Mandi & F. Aziz. 2023. Green synthesis of reduced graphene oxide and their use on column adsorption of phenol from olive mill wastewater. *Process Safety and Environmental Protection*, 170, 1079-1091. <https://doi.org/10.1016/j.psep.2022.12.086>
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- A Lissaneddine, MN Pons, F Aziz, N Ouazzani, L Mandi, E Mousset.2022. Electrosorption of phenolic compounds from olive mill wastewater: Mass transport consideration under a transient regime through an alginate-activated carbon fixed-bed electrode. *Journal of Hazardous Materials*, 430 (2022) 128480. <https://doi.org/10.1016/j.jhazmat.2022.128480>
- T.E. Elmansour, L. Mandi, A. Hejjaj, N. Ouazzani. 2022. Nutrients' behavior and removal in an activated sludge system receiving Olive Mill Wastewater. *Journal of Environmental Management*, vol. 305, 114254. DOI <https://doi.org/10.1016/j.jenvman.2021.114254>
- R., Mugani, R. P., Aba, F., El Khalloufi, A., Hejjaj, N., Ouazzani, C.M.R., Almeida, P. N., Carvalho, V., N., Vasconcelos, A., Campos, L., Mandi, B. Oudra. 2022. Multi-Soil-Layering Technology: A New Approach to

- Remove *Microcystis aeruginosa* and Microcystins from Water. *Water* 2022, 14, 686. <https://doi.org/10.3390/w14050686>
- A. Lissaneddine, Marie-Noëlle Pons, Faissal Aziz, Naaila Ouazzani, Laila Mandi, Emmanuel Mousset. 2022. A critical review on the electrosorption of organic compounds in aqueous effluent – Influencing factors and engineering considerations. *Environmental Research*, vol. 204, 112128. <https://doi.org/10.1016/j.envres.2021.112128>
 - L. Saadoun, Alessio Campitelli, Jan Kannengiesser, Daniel Stanojkovski, Abdelhafid El Alaoui El Fels, Laila Mandi, Naaila Ouazzani. 2022. Acidogenic digestion of organic municipal solid waste in a pilot scale reactor: Effect of waste ratio and leachate recirculation and dilution on hydrolysis and medium chain fatty acid production. vol. 17, 100872. <https://doi.org/10.1016/j.biteb.2021.100872>
 - R. P., Aba, Mugani, R., Hejjaj, A., Brugerolle de Fraissinette, N., Oudra, B., Ouazzani, N., Mandi, L. 2021. First Report on Cyanotoxin (MC-LR) Removal from Surface Water by Multi-Soil-Layering (MSL) Eco-Technology: Preliminary Results. *Water*, 13(10), 1403. <https://doi.org/10.3390/w13101403>
 - S. Sbahi, N. Ouazzani, A. Hejjaj, L. Mandi. 2021. Nitrogen modeling and performance of Multi-Soil-Layering (MSL) bioreactor treating domestic wastewater in rural community. *Journal of Water Process Engineering*. vol. 44, issue undefined, p. 102389. <https://doi.org/10.1016/j.jwpe.2021.102389>
 - A. Lissaneddine, L. Mandi, M. El Achaby, E. Mousset, Eldon R. Rene, N. Ouazzani, M. Noëlle Pons, F. Aziz. 2021. Performance and dynamic modeling of a continuously operated pomace olive packed bed for olive mill wastewater treatment and phenol recovery. *Chemosphere* vol. 280, issue undefined, p. 130797. <https://doi.org/10.1016/j.chemosphere.2021.130797>
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- MO. Belloulid, H Hamdi, L Mandi, N Ouazzani, 2019. Solar drying of wastewater sludge: a case study in Marrakesh (Morocco), *Environmental technology* 40 (10), 1316-1322.
- L. Midhat, N Ouazzani, A Hejjaj, A Ouhammou, L Mandi, 2019. Accumulation of heavy metals in metallophytes from three mining sites (Southern Centre Morocco) and evaluation of their phytoremediation potential, *Ecotoxicology and environmental safety* 169, 150-160.
- T. El Moussaoui, L Mandi, S Wahbi, S Masi, N Ouazzani, 2019. Soil proprieties and alfalfa (*Medicago sativa* L.) responses to sustainable treated urban wastewater reuse, *Archives of Agronomy and Soil Science*, 65(13).
- T El Moussaoui, S Wahbi, L Mandi, S Masi, N Ouazzani. 2019. Reuse study of sustainable wastewater in agroforestry domain of Marrakesh city, *Journal of the Saudi Society of Agricultural Sciences*, 18, (3), 288-293
- W. Boumalek, A Kettab, N Bensacia, Maria C. Bruzzoniti, D Ben Othman, L Mandi, M. Nacer Chabaca, S Benziada, 2019, Specification of sewage sludge arising from a domestic wastewater treatment plant for agricultural uses, *Desalination and Water Treatment*, 143 (2019) 178–183.
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- L Latrach, N Ouazzani, A Hejjaj, M Mahi, T Masunaga, L Mandi. 2018. Two-stage vertical flow multi-soil-layering (MSL) technology for efficient removal of coliforms and human pathogens from domestic wastewater in rural areas under arid climate, *International journal of hygiene and environmental health* 221 (1), 64-80.
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BOOK CHAPTERS

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- Midhat, L., Mandi, L., Ouazzani, N., Tounsi, A., Zine, H., Merzouki, H. **2022**. Metallic Trace Elements in Soil: Persistence, Toxicity, Bioaccumulation, and Biological Remediation. In: Chatoui, H., Merzouki, M., Moummou, H., Tilaoui, M., Saadaoui, N., Brhich, A. (eds) Nutrition and Human Health. Springer, Cham. https://doi.org/10.1007/978-3-030-93971-7_5
- Aziz, F., El Achaby, M., Ouazzani, N., El-Kharraz, J., Mandi, L. **2020**. Rainwater Harvesting: A Challenging Strategy to Relieve Water Scarcity in Rural Areas. In: Patnaik, S., Sen, S., Mahmoud, M. (eds) Smart Village Technology. Modeling and Optimization in Science and Technologies, vol 17. Springer, Cham. https://doi.org/10.1007/978-3-030-37794-6_13
- Mandi L., Hilali S., Chemat F., Idlimam A. **2019**. Solar as sustainable energy for processing, preservation, and extraction. In: Chemat, F., Vorobiev, E. (eds) Green Food Processing Techniques, Academic Press, 2019, Pages 499-511, ISBN 9780128153536. <https://doi.org/10.1016/b978-0-12-815353-6.00018-5>

PATENTS

1. Domestic wastewater treatment by Multi-Soil-Layering technology in small communities. University of Cadi Ayyad, Reference: MA 37803 B1, Cl. international: B01D 25/02; C02F 3/02; C02F 1/00. publication date : 31.01.2017
2. Gray water treatment by horizontal subsurface flow constructed wetland. University of Cadi Ayyad, Reference: MA 37804 BI; Cl. International : C02F 3/32 ; C02F/30 ; publication date: 28.04.2017
3. Method of treating chrome tanning discharges by coupling electro-coagulation and adsorption on marble powder. University of Cadi Ayyad, Reference: MA 39571 B1; Cl. International : C02F 1/463; C02F 1/28; publication date: 28.09.2018
4. Continuous flow process based on bio-adsorbents to treat industrial effluents; University of Cadi Ayyad, Reference: MA 44429 B1; Cl. International: B01D 15/00; B01J 20/04; C02F 1/288; C02F 1/28; B01J 20/043; B01J 20/24; publication date : 28.10.2020

ORGANISATIONS OF SCIENTIFIC EVENTS

Chair and organiser of several international events of which the most important are:

Event	Participants number
1 st International Conference on Biomass Valorization for Sustainable Applications (BIOVASA) Marrakech, 2-3 November 2023	140
9 th International Conference on Water Resources in the Mediterranean Basin (WATMED 9) Online Marrakech, 26-28 May 2021	150
Workshop on Africa sustainable solid waste management (AFRIWASTE 2018) Marrakech, 7-9 November 2018	200
International Conference on Water, Energy & Climate Changes (WECC 2016), Labélisée COP22 Marrakech, 1-4 June 2016 .	250
7 th International Conference on Water Resources in the Mediterranean Basin (WATMED7) Marrakech, 8-11 October 2014	350
2 nd International Conference on Biotechnology for Sustainable Water Supply of Africa Marrakech, 8-10 January 2014	200
2 nd WATERBIOTECH Workshop Application of biotechnologies for water treatment in the African context, Marrakech, 16-17 September 2013	50
Brokerage event on innovative technologies for water management in industry and in agriculture that brought together manufacturers, operators, policy makers and researchers Marrakech, 7 March 2013	150
2 nd SOWAEUMED International Workshop on Innovative Technologies for Solid Waste and water treatment, ITS2WAT-2012, Marrakech, 23-26 May 2012	120
International Conference on Water and the Environment (WATEIC-2011) under the patronage of His Majesty King Mohammed VI Marrakech, 26-29 October 2011	400
International Workshop "Opportunities for Partnerships in the Water and Sanitation Sector" with German Water Partnership, Marrakech, January 27-29, 2010	100
International Workshop Waste Cluster Initiative in partnership with the European Commission Marrakech, 13-15 January 2010	200
International Workshop on Technological Perspectives for Rational Use of Water Resource in the Mediterranean Basin Marrakech, 29 October-2 November 2008	300

PEER REVIEWING

- Member of the scientific committees of several international conferences (4th IWA World Water Conference, Smallwatt11, WATMED, CIERTA, TIWATMED, RICMD, EPCOWM, WATEIC, WATERBIOTECH, SOWAEUMED, 2nd IWA Workshop on Evolution of Qanat and Relevant Hydraulic Technologies, BIOVASA, etc.).

- Reviewer for the following scientific journal:
 - ✓ Chemosphere
 - ✓ Cleaner Production
 - ✓ Desalination & Water treatment
 - ✓ Ecological Engineering
 - ✓ Environmental Sciences and Pollution Research
 - ✓ Environmental Sciences and Technology
 - ✓ International Journal of Phytoremediation
 - ✓ Hazardous Material
 - ✓ Minerals
 - ✓ Sciences of Total Environment
 - ✓ Water
 - ✓ Water Process Engineering
 - ✓ Water Research journal
 - ✓ Water Sciences & Technology

AWARDS AND DISTINCTIONS

Designation	Organization	Year	Venue
Best Poster Award	Stockholm Water Symposium,	1996	Stockholm, Sweden
Gold Medal	6 th International Water Symposium	2004	Cannes, France
Fellow of Water academy	France Water Academy	2014	Paris, France
IDB Prize for Women's Contribution to Development 10th Edition “women’s contribution to water resources management.”	Islamic Development Bank (IDB)	2015	Maputo, Mozambique

GUEST EDITOR

Journal	Special issue/Topic
WATER	Cyanobacteria Harmful Bloom Remediation Enabling Eco-Technology for Water Reclamation https://www.mdpi.com/journal/water/special_issues/HABs_Water
WATER	New Insights into Wastewater Reclamation and Reuse https://www.mdpi.com/si/140412
RECENT PROGRESS IN MATERIALS	Wastewater Reclamation and Reuse https://www.lidsen.com/journals/rpm/rpm-special-issues/wastewater-reclamation-reuse
FRONTIERS IN WATER Environmental Water Quality	Quality of Water Used for Irrigation Purposes