

**Sustainable Water Management  
Doctoral Programme (Water4All)**



METU



<b>Title of the PhD Project</b>	Energy and water efficient bioremediation of polluted soils using energy crops
<b>Acronym</b>	BioREN
<b>Research Fields of the Project</b>	Environmental Engineering, Energy Systems Engineering, Chemical Engineering
<b>Keywords</b>	bioremediation, energy crops, soil pollution
<b>Host Institution, Department and Campus Location</b>	Izmir Institute of Technology, Environmental Engineering, Izmir
<b>PhD Awarding Institution and Graduate Programme</b>	Izmir Institute of Technology, Environmental Engineering Ph.D. Programme
<b>Name and Affiliation of Main Supervisor</b>	Assoc. Prof. Hatice Eser Ökten, IZTECH
<b>Name and Affiliation of Co-Supervisors</b>	Prof. Dr. Melek Özkan, GTU
<b>Research Environment and Infrastructure</b>	Izmir Institute of Technology
<b>Scientific Context of the Project</b>	Agricultural soils may face a wide range of inorganic or organic contaminants, potentially compromising the quality of food crops by elevating pollutant concentrations or posing risks to groundwater and surface waters. The extensive array of potential contaminant scenarios and emerging pollutants necessitates the ongoing development of new remediation strategies, including the combination of proven options and the innovation of deployment techniques. For three different groups of pollutants the DC will develop soil treatment systems using selected energy crops. The potential use of energy crops will be evaluated ecotoxicologically and energetically.

**Sustainable Water Management  
Doctoral Programme (Water4All)**



METU



<b>Brief Workplan</b>	<p>0-2 year: Technical, academic and non-academic formal training.</p> <p>2. year: Qualifying Exam and Proposal</p> <p>1-3 year: Laboratory studies, data collection, data analysis</p> <p>3-4 year: Data analysis, thesis preparation</p>
<b>Innovative Aspects of the Project</b>	<p>Phytoremediation potential will be evaluated for different types of pollutants. An engineered system – a treatment reactor – will be developed.</p>
<b>Training Opportunities of the Project</b>	<ul style="list-style-type: none"> <li>• Analytical instruments such as GC-MS, ICP-MS</li> <li>• Statistics</li> </ul>
<b>Interdisciplinary Aspects</b>	<p>This project will necessitate collaboration of environmental engineering and energy systems engineering fields.</p>
<b>Intersectoral Mobility</b> <input type="checkbox"/> Short Visit <input checked="" type="checkbox"/> Secondment	<p>ENTA Treatment Company</p>
<b>Intersectoral Mobility</b> <input type="checkbox"/> Short Visit <input type="checkbox"/> Secondment	
<b>International Academic Secondment</b>	<p>University of Calabria, Italy</p>

<b>Main Supervisor</b>	
<b>Brief CV</b>	<p><b>Assoc. Prof. Dr. Hatice Eser ÖKTEN</b></p> <p>E-mail: <a href="mailto:haticeokten@iyte.edu.tr">haticeokten@iyte.edu.tr</a></p>

	<p><b>Academic Degrees</b></p> <p>Ph.D. Environmental Engineering, University of Wisconsin-Madison, USA 2008</p> <p>M.Sc. Environmental Engineering, Istanbul Technical University, Türkiye 2002</p> <p>B.Sc. Environmental Engineering, Istanbul University, Türkiye 1999</p> <p><b>Professional Networks</b></p> <p>Google Scholar: <a href="https://scholar.google.com/citations?user=GLVckPMAAAAJ&amp;hl=en&amp;oi=ao">https://scholar.google.com/citations?user=GLVckPMAAAAJ&amp;hl=en&amp;oi=ao</a></p> <p>ResearchGate: <a href="https://www.researchgate.net/profile/Hatice-Eser-Oekten">https://www.researchgate.net/profile/Hatice-Eser-Oekten</a></p> <p>Scopus: <a href="https://www.scopus.com/authid/detail.uri?authorId=12776514500">https://www.scopus.com/authid/detail.uri?authorId=12776514500</a></p> <p>ORCID: <a href="https://orcid.org/0000-0001-7511-940X">https://orcid.org/0000-0001-7511-940X</a></p>
<b>Co-supervisors</b>	
<b>Brief CV</b>	<p><b>Prof. Dr. Melek ÖZKAN</b></p> <p>E-mail: <a href="mailto:mozkan@gtu.edu.tr">mozkan@gtu.edu.tr</a></p> <p><b>Academic Degrees</b></p> <p>Ph.D. Biotechnology, Middle East Technical University, Türkiye 2002</p> <p>M.Sc. Biotechnology, Middle East Technical University, Türkiye 1997</p> <p>B.Sc. Biology, Middle East Technical University, Türkiye 1994</p> <p><b>Professional Networks</b></p> <p>Google Scholar: <a href="https://scholar.google.com/citations?user=prMIR9sAAAAJ&amp;hl=en&amp;oi=ao">https://scholar.google.com/citations?user=prMIR9sAAAAJ&amp;hl=en&amp;oi=ao</a></p> <p>ResearchGate: <a href="https://www.researchgate.net/profile/Melek-Ozkan">https://www.researchgate.net/profile/Melek-Ozkan</a></p> <p>Scopus: <a href="https://www.scopus.com/authid/detail.uri?authorId=8850020000">https://www.scopus.com/authid/detail.uri?authorId=8850020000</a></p>

**Sustainable Water Management  
Doctoral Programme (Water4All)**



METU

İTÜ



	ORCID: <a href="https://orcid.org/0000-0001-9017-5389">https://orcid.org/0000-0001-9017-5389</a>
--	---