Title of the PhD Project	Managing fragile ecosystems: Investigating the role of blue nature-based solutions in Coastal Areas in Mediterranean Basin
Acronym	MB-NBS
Research Fields of the Project	Ecosystem Management, Spatial Planning
Keywords	Remote sensing, artificial intelligence, spatial design solutions, decision support
Host Institution, Department and Campus Location	Izmir Institute of Technology Department of City and Regional Planning Gülbahçe Campus, İzmir, Türkiye
PhD Awarding Institution and Graduate Programme	Izmir Institute of Technology Graduate School PhD in City and Regional Planning
Name and Affiliation of Main Supervisor	Prof. Dr. Koray VELİBEYOĞLU Izmir Institute of Technology Department of City and Regional Planning
Name and Affiliation of Co-Supervisors	Assist. Prof. Dr. Nicel SAYGIN, Izmir Institute of Technology
Research Environment and Infrastructure	The selected candidate will have access to the research infrastructure available at Izmir Institute of Technology.

Scientific Context of the Project	Remote sensing and GIS-based change detection is one the advanced surveying methods of urban spatial planning especially for fragile urban landscapes continuously need of monitoring. Climate change may harm to those fragile ecosystems related to the land-sea-interaction areas. Nature-based solutions are significant tools in a new circular economic model for climate change mitigation and adaptation. Therefore, blue nature-based solutions (B-NBSs) may take part in the adaptation measures and may help to solve major problems to be solved in those systems. By using remote sensing technology and GIS-based tools combined with AI-based agents may help to recognize, prioritize and rank those B-NBSs among many alternatives on a quantitative basis. The results of these AI-assisted analysis the researchers will understand the catalog of actions and constitute decision making procedures in managing fragile sea-land interaction ecosystems to be done.
Brief Workplan	The main aim of the research is to understand a detection procedure for B-NBSs by using AI-assisted multi-agent models to manage adaptation measures. The developed framework is expected to overcome the problems observed in land-sea interaction areas based on climate change effects. A tentative work plan is given as follows: 1. Conceptualizing the B-NBSs for fragile ecosystems 2. Conceptualizing the multi-agent model 3. Detection and sensing technologies for land management 4. Incorporating AI tools 5. Model testing and designing decision making systems
Innovative Aspects of the Project	Multi-agent models incorporating AI, remote sensing and GIS based systems, spatial management and decision-making framework
Training Opportunities of the Project	The doctoral candidate will have a chance for training on subjects such as land management, AI-assisted multi-agent systems, land-sea interaction areas, basin planning, decision making tools in renown government and private organizations as well as academic institutions. The training program will be custom designed for the selected candidate according to his/her needs and interests.

Interdisciplinary Aspects	This research involves topics on marine biodiversity, computer science, remote sensing and land management.
Intersectoral Mobility ☒ **Short Visit** ☐ **Secondment**	General Directorate of Water Management
Intersectoral Mobility ☒ **Short Visit** ☐ **Secondment**	Izmir Water and Sewerage Administration
International Academic Secondment	National Technical University of Athens

Main Supervisor
Brief CV

Brief CV

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Academic Degrees

Ph.D.   City & Regional Planning, Izmir Institute of Technology, Türkiye   2004

M.Sc.   Urban Design, Izmir Institute of Technology, Türkiye   2000

B.Sc.   City & Regional Planning, Dokuz Eylül University, Türkiye   1994

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Co-supervisors	
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	M.Sc. City Planning, University of Pennsylvania, USA 1997
	M.Sc. City Planning, Clemson University, USA 1996
	B.Sc. City and Regional Planning, Dokuz Eylul University, Türkiye 1991
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