



SUSTAINABILITY 2023-2024

COMMUNICATION ON
ENGAGEMENT (COE)





15 LIFE ON LAND

WORKSHOPS ON LIFE ON LAND

In line with its commitment to SDG 15 (Life on Land), the University Institute of the Environment (IOE) has made significant contributions through various workshops and training sessions. Dr. George Mitri, Director of the Land and Natural Resources Program, highlighted Lebanon's climate challenges at the "Navigating Climate Change and Environmental Activism in the MENA Region" workshop hosted by the American University of Beirut, emphasizing the country's low adaptive capacity to climate change. He also participated in the "Innovation Approaches to Forest Management for Fire Prevention" workshop at Notre Dame University, discussing forest fire risk management and presenting guidelines for post-fire impact assessment and restoration. Additionally, Dr. Manal Nader, Director of the Institute of Environment, was a main speaker at the EcoTheo Symposium organized by The Middle East Council of Churches, where he introduced the Institute's strategy until 2027 and discussed the Greek Orthodox Patriarchate's 7-Year Plan for environmental advocacy and practices.

LEBANON'S CLIMATE CHALLENGES

Dr. George Mitri, Director of the Land and Natural Resources Program at UOB, IOE, discussed Lebanon's climate challenges during the "Navigating Climate Change and Environmental Activism in the MENA Region: Challenges and Opportunities" workshop at the American University of Beirut on March 14, 2024. He emphasized Lebanon's low adaptive capacity to climate change and the significant threat it poses to the survival of the country's forests, plants, and wildlife.



DR. GEORGE MITRI ON FOREST FIRE MANAGEMENT

Dr. George Mitri participated in the "Innovation Approaches to Forest Management for Fire Prevention" workshop at Notre Dame University (NDU) on November 2, 2023. He discussed forest fire risk management in a changing world and presented guidelines for post-fire impact assessment, monitoring, and restoration.



DR. MANAL NADER AT ECOTHEO SYMPOSIUM

Dr. Manal Nader, Director of the IOE at the UOB, was a main speaker at the EcoTheo Symposium organized by The Middle East Council of Churches. The opening session took place on October 4 at Holy Spirit University of Kaslik, with the main symposium held on October 5, 2023, at Saint Joseph University in Beirut. Dr. Nader introduced the IOE and its strategy until 2027, and discussed the Greek Orthodox Patriarchate of Antioch and All the East's 7-Year Plan for Generational Changes for a Living Planet, emphasizing the Church's commitment to environmental advocacy and practices.



UNIVERSITY RESEARCH CONTRIBUTIONS TO SDG 15

The university's research publications in SDG 15 over the past two years dealt with the use of geoinformation technology to monitor protected areas in Lebanon, the development of landscape indicators for sustainability, the mechanical and thermal characterization of bio-sourced mortars made from agricultural and industrial by-products, the application of geopolymer materials for green roofs, and the use of machine learning models to predict water penetration depth in concrete. In the past two years, these publications have significantly contributed to advancing sustainability and environmental protection.

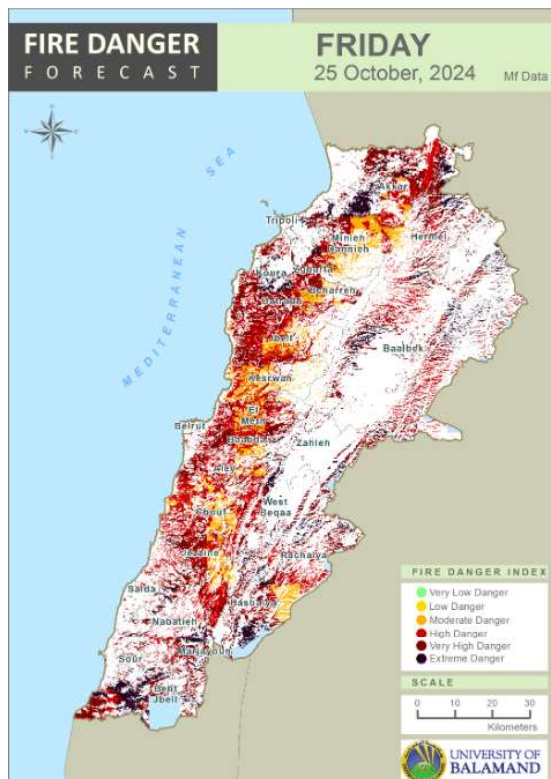
1. El Mir, A., El-Zahab, S.M., Nasr, D.E., Assaad, J.J., & El-Hassan, H. (2024). **Use of machine learning models to predict the water penetration depth in concrete.** Journal of Building Engineering.
2. Aad, R., El Balaa, R., Tanios, C., & Nemer, N.M. (2024). **Landscape Indicators—An Inventive Approach for the Sustainability of Landscapes.** Sustainability (Switzerland). Open access.
3. Saba, M., Pérez, G., Coma, J., & Polls, M. (2023). **Geopolymer as an Innovative Material for Green Roofs- A State-of-the-Art Review.** In E3S Web of Conferences. Open access.
4. Affan, H., Arairoy, W., & Arayro, J. (2023). **Mechanical and thermal characterization of bio-sourced mortars made from agricultural and industrial by-products.** Case Studies in Construction Materials. Open access.
5. Mitri, G.H., Bechara, J., Stephan, J.M., McKenna, M., & Choueiter, D. (2023). **Geoinformation applications for monitoring protected areas in Lebanon.** In Proceedings of SPIE - The International Society for Optical Engineering.

IOE'S LAND AND NATURAL RESOURCES PROGRAM LEADS GLOBAL FIRE MANAGEMENT AND CLIMATE ACTION TALKS



The Institute of the Environment's Land and Natural Resources Program at the University of Balamand has been at the forefront of several high-profile international workshops and conferences over the past two years. The program played a pivotal role in the third technical workshop of the Global Fire Management Hub in Rome, contributing to the strengthening of the Near East Fire Network. It also made significant contributions at the World Fire Congress in Washington, DC, where discussions focused on Disaster Risk Reduction Programs. In Thessaloniki, at The Economist Impact's Natural Disasters Summit, the program addressed the critical issue of climate disasters and their impact on forced migration. Furthermore, at COP28, the program highlighted Lebanon's strategic importance in global climate change discussions. The program also participated in the 9th International Conference on Forest Fire Research in Portugal, promoting international cooperation in forest fire science and technology. These efforts also align with the United Nations' Sustainable Development Goals, particularly Climate Action (SDG 13), showcasing the program's commitment to advancing sustainability and environmental protection.

MANAGING WILDFIRE RISKS



The Land and Natural Resources Program at the Institute of the Environment leads forest fire research in Lebanon, focusing on wildfire prevention and awareness. Firelab is a key tool for forecasting and monitoring forest fires. It provides fire risk information, allows users to check fire danger levels up to 9 days in advance, and helps authorities deploy resources effectively. Increasing awareness and use of Firelab can enhance fire prevention efforts. (<http://ioe-firelab.balamand.edu.lb>)

UOB WEATHER STATION



The installed weather station is designed to endure harsh environmental conditions and includes various sensors such as wind speed, wind direction, temperature, relative humidity, rainfall, radiation, and pressure. These sensors are mounted on a customizable mast that can be hydraulically adjusted up to 9 meters. The data logger, in a secure box with an internal battery, ensures continuous data handling during power interruptions. It connects to a central server via RS 232 cables for uninterrupted data transfer. The system uses two software programs: one for real-time data retrieval and display, and another for extensive data storage in Excel and PDF formats. The server can connect to remote units for centralized data collection.

LAUNCH CEREMONY FOR THE FIREPATROL APPLICATION

Under the patronage of H.E. Dr. Nasser Yassin, Minister of Environment, and in the presence of Dr. Elias Warrak, President of the University of Balamand, the Reforestation Association in Lebanon organized a launch ceremony for the Firepatrol application. Developed in partnership with the Land and Natural Resources Program at the Institute of Environment at the University of Balamand and ESRI-Lebanon, the Firepatrol application aims to support local fire risk management efforts. This event took place as part of the National Forest Fire Prevention Week and the National Forest Fire Prevention Campaign for 2023. The ceremony highlighted the significance of embracing technology to enhance responses to fire hazards and protect local communities. Specifically, the focus was on raising awareness about the potential for fire outbreaks by utilizing data from the University of Balamand's Fire Laboratory. The laboratory employs an advanced and distinctive modeling system developed by a specialized research team at the Institute of Environment.

BRIDGING SALT INITIATIVES FROM ANFEH LEBANON TO SFAX IN TUNISIA



Under the theme of sustainable tourism and preservation of ecosystems and biodiversity in artisanal Salinas, Mrs. Rita Kalindjian-member of Anfeh and Neighborhood Heritage Committee and Hima Anfeh- joined the Sustainable Management Model for Mediterranean Artisanal Salinas program on 22 and 23 February in Tunis. MedArtSal project is led by the University Consortium for Industrial and Managerial Economics (Italy) in partnership with Fair Trade Lebanon and the Lebanese Association for the Development of Rural Capacities, and other similar institutions from Tunisia, Spain and Italy.

FIELD DAY ON POST-FIRE ASSESSMENT AND LAND PRESERVATION



Dr. George Mitri led master students on a field day, implementing a thorough post-fire assessment protocol. The initiative highlighted the critical importance of protecting and maintaining burned lands from human interference and natural degradation, such as soil erosion. The team focused on a site featuring burnt pine trees mixed with oak trees on a steep slope. Due to the challenges in the natural regeneration of pine trees, the efforts were concentrated on pruning these trees to create terraces, effectively preventing soil erosion.

REFORESTATION PROJECT IN JURD TANNOURINE



The Land and Natural Resources Program at the Institute of Environmental Studies at the University of Balamand has completed a reforestation project in Jurd Tannourine. The Tannourine Municipality received the reforested site during a ceremony held at the municipal building in Tannourine. This project, part of the "Support for Social Resilience, Infrastructure, Reforestation, and Agriculture in Lebanon" initiative, was managed by the Council for Development and Reconstruction with the Ministry of Agriculture and funded by the French Development Agency (AFD). The IOE Studies implemented the project with assistance from the Tharwa Association.

ECO CLUB INITIATIVES



Over the past two years, the Eco Club has been highly active, engaging in numerous initiatives such as hosting visits and demonstrations for local students, creating herbariums, and organizing outdoor fitness sessions for Earth Day. They have highlighted campus environmental assets, collaborated on International Water Day projects, led seed planting and insect preservation activities, and participated in campaigns to save monk seals. Additionally, they promoted sustainable Valentine's Day decorations, attended waste management conferences, engaged in youth training programs for policy inclusion, raised awareness about water pollution, conducted presentations on marine biodiversity, and participated in sessions on the Lebanese Parliament. Their efforts demonstrate a strong commitment to environmental education and conservation.

THEOLOGY STUDENTS ENGAGE IN CONSERVATION AND ENVIRONMENTAL APPRECIATION

For two consecutive years, on Lebanese National Day, students from the St. John of Damascus Institute of Theology visited various sites in Lebanon, such as the Cathedral of Saint Georges in Beirut, Jeita Grotto, Harissa and various sites in Akkar, Lebanon.

These experiences not only offered participants memorable adventures but also promoted awareness and appreciation of natural ecosystems. By engaging with nature, the students fostered a sense of environmental responsibility and stewardship, highlighting the importance of the sustainable use of terrestrial ecosystems.



OTHER STUDENT LED ACTIVITIES

Activity Title	Activity Type	Club Name
Earth Day	Gatherings and Interactive Activities	Eco and LeMSIC
World water Day	Interactive Activities	Eco and Debate
Cats and Cookies	Humanitarian Initiatives and Fundraisers	Animal Rights
Horsh Beirut tree Planting	Humanitarian Initiatives and Fundraisers	ASCE
Visit to Alfonse De la martine School	Field Trip	Eco
Field Visit - Bekaa	Field Trip	SSCHE and SPE x Erasmus
End of Semester trip	Gatherings and Interactive Activities	GoGreen

IOE SDG 15 PROJECTS

PARSIFAL

Objective: To address deforestation and local development through state-of-the-art reforestation and sustainable forest management activities. This includes the afforestation of 50 hectares in high mountain areas of Jurd (Tannourine).



Funding Agency: Agence Française de Développement (AFD)

Budget & Period: 3,000 USD (2024, 6 months)

Implemented By: Land and Natural Resources (LNR) Program (Leader)

Partners: AFDC and Municipality of Tannourine

Provision of Consultancy Services for Landscape-Scale Survey

Objective: Mapping and analysis of land degradation. Development of a Decision-Support System for pilot selection and an ecological assessment for the districts of Akkar and Jbeil

Funding Agency: Global Environment Facility (GEF) through United Nations Development Program (UNDP)

Budget & Period: USD 89,924 (2020 - 2024)

Implemented By: Land and Natural Resources Program

Provision of Services for the Fauna Assessment and Development of Priority Conservation and Site-Specific Monitoring Plans within Nature Reserves in Lebanon

Objective: To validate and update existing biodiversity surveys and shed light on taxa of important biological and patrimonial value

Funding Agency: Ministry of Foreign Affairs and International Cooperation of the Italian Republic

Budget & Period: 262,500 USD (2023-2024)

Implemented By: UNDP, Association for Bird Conservation in Lebanon (ABCL), University of Balamand (UOB), Istituto Oikos Onlus (Oikos)