



SUSTAINABILITY 2023-2024

COMMUNICATION ON
ENGAGEMENT (COE)





7 AFFORDABLE AND CLEAN ENERGY

RESEARCH TOWARD SDG7

In the past two years, significant advancements have been made across various fields of research, aligning with Sustainable Development Goal 7 (SDG 7) which aims to ensure access to affordable, reliable, sustainable, and modern energy for all. Studies on vertical axis wind turbines have optimized their design for urban environments, enhancing efficiency and noise reduction, contributing to cleaner energy solutions. Research on glioblastoma stem cells has uncovered crucial metabolic and immune evasion mechanisms, paving the way for new immunotherapeutic strategies. Innovations in Savonius wind turbine shielding have demonstrated improved performance through reduced negative torque, promoting more efficient wind energy generation. Sustainable construction materials, such as polymer fiber reinforced geopolymer concrete, have been developed using waste steel slag and fly ash, enhancing durability and strength while recycling industrial waste. Additionally, life cycle assessments of photovoltaic-diesel hybrid systems have shown environmental benefits over traditional diesel-only systems, highlighting the potential for reduced emissions and a smaller environmental footprint, thus supporting the transition to sustainable energy sources.

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UNIVERSITY OF BALAMAND UNVEILS SOLAR ENERGY PROJECT, PAVING THE WAY FOR A GREENER FUTURE

The University of Balamand is proud to announce the successful completion and operation of an extensive solar energy project on its Koura campus. In partnership with NovaEnergia SAL, a leader in the energy sector, the university has embarked on a journey towards environmental stewardship and energy independence. This ambitious project encompasses 2,772 state-of-the-art Longi Himo X6 solar modules, each boasting a capacity of 580 W, connected across 13 Sungrow on-grid inverters of 125 KVA each. Spread over approximately 13 buildings, these installations are a testament to the university's commitment to adopting the highest technical standards in renewable energy.

Projected to produce around 2,600,000 KWh of clean, renewable energy annually, this solar initiative is expected to fulfill approximately 70% of the university's daytime energy needs and 60% of its overall energy consumption. This significant shift towards solar energy underscores the University of Balamand's dedication to reducing its carbon footprint and promoting environmental sustainability. The impact of this project extends far beyond energy savings. It is estimated to reduce carbon emissions by a remarkable 1,040 metric tons annually, an achievement equivalent to the CO₂ absorption capacity of approximately 47,273 mature trees each year. This substantial reduction in greenhouse gas emissions is a clear demonstration of the university's active role in combating climate change and fostering a sustainable future for generations to come.

Dr. Elias Warrak, President of the University of Balamand, expressed enthusiasm about the project's completion: "This solar energy project is not just an investment in renewable resources; it is a testament to our responsibility towards the planet and our commitment to lead by example in the transition to sustainable energy solutions. We are immensely proud to be at the forefront of this significant environmental milestone. As the University of Balamand continues to innovate and inspire, this solar project marks a significant step forward in UOB's ongoing journey towards sustainability, environmental responsibility, and academic excellence."



A PIONEERING SUSTAINABLE INNOVATION WITH THE E-SHADE SOLAR BENCH

Long before solar equipment became commonplace, the Faculty of Engineering at the University of Balamand (UOB) had already paved the way for a sustainable future, setting an example for environmental stewardship and technological advancement in the region. In a pioneering initiative, the Faculty of Engineering emerged as the first in Lebanon to recognize the transformative potential of solar energy with its innovative E-Shade solar bench. Manufactured to promote relaxation, connectivity, and environmental awareness, this solar-powered bench redefined outdoor seating experiences well ahead of the widespread adoption of solar equipment in Lebanon.

Four years ago, dating back to December 2019, the brilliant Electrical Engineering students Alissar Wahab and Tony Klaimy unveiled the E-Shade solar bench as part of their Master's graduation project. The bench was officially inaugurated and put into service at UOB's main campus in 2021, after COVID became under control. This pioneering innovation made possible thanks to the unwavering support and visionary leadership of Dr. Maged Najjar, a Full Professor in the Electrical Engineering Department at UOB.

The E-Shade bench was meticulously designed to convert solar energy into electric power and should be able to handle and charge 4 laptops and 8 cellphones at the same time, without any circuit breakage. Additionally, LED lights are implemented in the ceiling of the bench providing an ambient illumination. As a result, the system demands an output power of 540W to function effectively. One of the bench's specifications is that it can seats up to 5 people with shaded tables and benches as well as one wheelchair access.

This forward-thinking design not only provided a relaxing spot for students and visitors but also served as a sustainable link for productivity and connectivity. The E Shade solar bench liberated users from the constraints of indoor power outlets, allowing students to embrace the sunshine while maintaining productivity. Whether collaborating on projects, studying, or enjoying a leisurely lunch break, students found comfort in the fusion of productivity and sustainability offered by the E-Shade solar bench.



MOU BETWEEN THE UNIVERSITY OF BALAMAND AND THE MINISTRY OF ENERGY AND WATER

The University of Balamand (UOB) has signed an MoU with Lebanon's Ministry of Energy and Water to enhance collaboration between the education and professional sectors. This partnership will involve UOB hosting workshops and seminars with the General Directorate of Oil, providing technical training for its employees, and developing performance indicators. In return, the ministry will offer training opportunities and support for UOB students' projects. This initiative aims to strengthen the relationship between academic institutions and government entities, fostering economic development and skill enhancement.

This collaboration is seen as a strategic move to integrate academic expertise into governmental operations, ensuring that decisions and projects are grounded in scientific research and innovative thinking. Dr. Walid Fayad, the Minister of Energy and Water, highlighted the critical role of the oil, gas, and petroleum sectors in Lebanon's economic development and expressed the ministry's commitment to supporting students through vocational courses and workshops. Dr. Elias Warrak, President of UOB, called for other ministries to follow suit, emphasizing that such partnerships can significantly enhance the performance of government institutions by leveraging academic knowledge and fostering strong connections between students and the public sector.



CONFERENCE AT THE UNIVERSITY OF BALAMAND SOUK EL GHARB ON CHALLENGES AND FINANCING METHODS OF RENEWABLE ENERGY

The University, in partnership with Yellow Eco Energy, organized a scientific conference titled "Renewable Energy and its Role in Solving the Energy Crisis in Lebanon" at the university's Souk El Gharb campus. The event, held under the patronage of the Minister of Energy and Water, H.E. Dr. Walid Fayad, featured notable attendees including UOB President Dr. Elias Warrak and several high-ranking officials and experts.

The conference addressed the challenges of renewable energy, facilitating discussions among public and private sector representatives, and donor organizations to find solutions and funding methods. It highlighted the latest developments in renewable energy and energy efficiency. The event concluded with recommendations and solutions aimed at transitioning to renewable energy sources to address Lebanon's energy crisis.

