

Search for a Spanish Partner for a Bilateral R&D Project

Organization	
Date of Request:	December 15, 2022
Company name:	University of Sharjah, Sharjah, UNITED Arab Emirates
Contact person and title/ designation:	Chaouki Ghenai Professor, Sustainable and Renewable Energy Engineering Department, College of Engineering; Coordinator - Renewable Energy and Energy Efficiency Research Group Chair - Energy and Climate Change, Sustainability Office Chairman – Research Funding Department, Office of Vice Chancellor for Research and Graduate Studies
E-mail:	cghenai@sharjah.ac.ae
Phone number:	971-6-505391
Mobile number:	971-525450865
Website:	https://www.sharjah.ac.ae/ http://www.sharjah.ac.ae/en/Research/RISE/SEDR/Pages/default.aspx http://www.sharjah.ac.ae/en/Research/rf/Pages/default.aspx

SECTION 1: Entity launching the partner search

(Please give brief / to the point explanations. For more explanation on any point below, you may add a short paragraph as an annexure, with this document.)

Sector	Clean Energy Transition: Energy and Climate Change, Renewable Energy, Energy Efficiency, Green Hydrogen, Alternative Fuels: Low and Zero Carbon Fuels (Biofuels, E-Fuels, Green Hydrogen, Green Ammonia), Decarbonization, Digitalization, Decentralization of Energy Sector, Sustainability, and Microgrid Power Systems
Entity mission or core functions	University of Sharjah Research Institute for Sciences and Engineering Sustainable Energy and Power System Research Centre Renewable Energy and Energy Efficiency Research Group
Date of establishment	1999
Ownership (if public and traded, add stock exchange and ticker symbol)	Semi Government

Total number of employees	2423
Number of employees in R&D	995
Key products sold or services provided	Higher Education Institution Research & Development Clean Energy Research and Development Energy and Climate Change Consulting Energy Strategy and Policy Advising Patenting and Product Development
Entity core technical competences	<ul style="list-style-type: none"> • Clean Energy: Building, Transportation, and Industrial Application • Renewable Energy • Energy efficiency • Green hydrogen • Alternative Fuels • Microgrids • Decarbonization • Decentralization • Digitalization • Sustainability
Key R&D programs and activities	<ul style="list-style-type: none"> • Clean Energy: Building, Transportation, Industrial Application • Renewable Energy • Energy efficiency • Green hydrogen • Alternative Fuels • Microgrids • Decarbonization • Decentralization • Digitalization • Sustainability • Renewable Energy for Charging EV vehicles • Renewable for agriculture application: agrivoltaics • Building integrated solar PV • Floating solar PV and Floating agriculture farms • Hybrid Power Systems • Renewable Energy Powered Desalination • Hydrogen powered drones. • Artificial Intelligence and Machine learning for Forecasting Power

	Systems
Examples of accomplishments	<p>Several projects with Sharjah Electricity and water authority (SEW), Dubai Electricity and Water Authority (DEWA), Ministry of Energy and Infrastructures, Sharjah Research Academy, Beeah Group, Government of Sharjah, and Graded Company:</p> <ol style="list-style-type: none"> 1- Water production from humid air (SEWA) 2- Solar Absorption chiller for cooling building (SEWA) 3- Cool pavement technology for Climate Change mitigation strategies (MOEI) 4- Artificial intelligence for forecasting power output from solar PV systems (DEWA) 5- Radiant cooling technology for reducing energy consumption form HVAC systems for Sharjah building (Government of Sharjah) 6- Dust cleaning and solar PV cooling Solar PVT (SEWA) 7- Hybrid Power systems (SEWA) 8- Green Hydrogen production (Graded Company – Italy) 9- Biofuels (Biodiesel and Biogas) production from Sharjah plants (Sharjah Research Academy) 10-Block chain for solar PV Electric Vehicles Charging Station (Beeah) 11- Municipal Waste Plasma Gasification for Syngas fuel production (Internal project) 12- International Collaboration: Perugia University (Italy) on cool pavement and cool roof technology for climate change mitigation; Saint Mary University (Canada) on Renewable Power Systems, Department of Chemical Science and Technology, Tokyo Institute of Technology (Japan) Desalination projects, University of Monastir (Tunisia) on solar PV thermal.
Company strategic orientation	The Office of the Vice for Research and Graduate Studies (VCRGS) is the leading administrative entity that organizes and

	<p>supervises all activities of research, development and innovation at UOS. The VCRGS has extensive responsibility and supervision for the development and implementation of all policies and procedures pertaining to the administration and execution of research across all disciplines at the university. The VCRGS works closely with the chancellor, the institutes' directors and college deans, and others administrative units to identify and ease obstacles to research, as the university pursues its strife for excellence in research and education. The Office of the VCRGS consists of the following institutes and Units:</p> <ul style="list-style-type: none"> • The Research Institute of Sciences and Engineering • The Research Institute of Health and Medical Sciences • The Research Institute of Humanities and Social Sciences • The College of Graduate Studies • The Research Funding Department • The Scientific Publishing Unit • The Technology Transfer Office • The Research Outreach Department
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SECTION 2: Spanish Company Profile

(Please provide a brief summary of the prospective partner company or organization. This summary may address some or all of the points below)

<p>Profile of ideal technology partner</p>	<p>Clean Energy Transition: Decarbonization, Digitalization and Decentralization of Energy Sector</p> <p>Applications: Residential and commercial buildings, transportation, and industrial applications)</p> <p>Renewable energy (Solar PV, Solar Thermal and Wind Turbine)</p> <p>Waste to Energy</p> <p>Low and Zero carbon fuels</p> <p>Renewable Hydrogen – production, storage, transportation, and end use (industry, transportation, and building)</p> <p>Miro grid power system</p> <p>Artificial Intelligence and machine learning for Energy</p> <p>Electric Vehicles</p> <p>Alternative fuels for aviation and marine applications.</p> <p>Innovative and smart solar energy Systems</p> <p>Drones for solar PV inspection</p> <p>Hydrogen powered drones</p>
<p>Core</p>	<p>Clean Energy Transition</p>

<p>technological competencies and expertise</p>	<p>Decarbonization, Digitalization and Decentralization of Energy Sector Applications: Residential and commercial buildings, transportation, and industrial applications) Renewable energy: Solar PV, Solar Thermal and Wind Turbine Waste to Energy Low and Zero carbon fuels Renewable Hydrogen – production, storage, transportation, and end use (industry, transportation, and building) Miro grid power system Artificial Intelligence and machine learning for Energy Electric Vehicles Alternative fuels for aviation and marine applications. Innovative and smart solar energy Systems Drones for solar PV inspection Hydrogen powered drones</p>
<p>Other essential qualifications (e.g.: ownership, track records etc.)</p>	<p>Track record on research and development, product development, and collaboration with universities and government agencies</p>
<p>If you have a list of companies with whom you are in contact or interested in contacting, please provide contact details.</p>	<p>The University of Sharjah is interested to collaborate with following companies working on Renewable Energy and Green Hydrogen:</p> <ul style="list-style-type: none"> Synera Renewable Energy Alten Renewable Energy Solar in Spain Solarnub Acciona, S.A BFS Blue Enterprises EDP Renováveis CAMM SOLUTIONS (SPAIN) R&D S.L.
<p>If you are interested in collaboration: please specify details and other important information you want to share with a potential company</p>	<p>Dr. Chaouki Ghenai from the University of Sharjah is interested in collaborating on research projects related to clean energy transition: decarbonization, digitalization and decentralization of the energy sectors. This will include but not limited to: Solar PV, solar thermal, wind, green hydrogen, waste to energy, biofuels, bifacial solar PV, floating solar PV, agrivoltaics, building integrated solar PV, energy forecasting, optimization of renewable energy systems, development of advanced control systems, digital twining of energy systems, advanced energy and hydrogen storage, hydrogen and hydrogen fuel blends combustion, supercritical CO2 power plants, power-to-X technologies, hydrogen powered drones, drones for solar PV and building roof inspections, etc...</p>

<p>Interested areas of collaboration</p>	<ul style="list-style-type: none"> • Green hydrogen production using Renewable energy: boost the renewable electricity production, improve the efficiency of the electrolyzer and reduce the cost of hydrogen. • Pilot project: testing different type of eletrolyzer technologies • Power-to-X technology • Decarbonization and Digitalization of Energy Sector: Renewable energy, artificial intelligence, machine learning, advanced control systems, energy forecasting, and optimization of the energy systems. • Use of hydrogen powered drones for the inspection of solar PV plants. • Innovative and smart renewable energy systems (bifacial solar PV, floating solar PV, building integrated solar PV)– boost the electricity generation. • Waste-to-energy projects • Renewable energy system integrated with desalination systems • Biofuels production
<p>Specific R&D contribution you are seeking/offering</p>	<p>Short Bio & Research Interests:</p> <p>Chaouki Ghenai is a Professor at the Sustainable and Renewable Energy Engineering Department (SREE), College of Engineering; Coordinator of the Renewable Energy & Energy Efficiency Research Group, Center for Sustainable Energy and Power Systems (CSEPS) at the Research Institute for Sciences and Engineering (RISE), and the Chairman of the Research Funding Department at the Office of Vice Chancellor for Research and Graduate Studies, University of Sharjah. Dr. Ghenai was listed in 2019, 2020, and 2021 (career and single year) World’s Top 2% Scientists in Energy – Mechanical Engineering & Transport (Enabling & Strategic Technologies). Dr. Ghenai received his PhD and master’s degrees in Mechanical Engineering from Orleans University, Orleans, France and bachelor’s degree in mechanical engineering from Constantine University, Constantine, Algeria. Before Joining the University of Sharjah, Dr. Ghenai was an Assistant Professor at Florida Atlantic University, Boca Raton, Florida and Project Manager at the Applied Research Centre, Miami, Florida. He worked also as a post doc at Cornell University (Ithaca, New York), and Research Associate at Kansas State University (Manhattan, Kansas), and University of California Los Angeles (Los Angeles, California). He received several teaching and research awards including Distinguished Faculty Research Award, University of Sharjah, Sharjah, UAE (2018 and 2021), Award for Excellence and Innovation in Undergraduate Teaching, Florida Atlantic University, Florida, USA (2010), Dubai Award for Sustainable Transport (2019), 7th Sharjah Sustainability Award , and 6th Sharjah Sustainability Award (Green Campus). Dr. Ghenai has published more than 200 research papers in technical</p>

	<p>journals, book chapters, and books. His research interests are renewable energy (bioenergy, solar, wind, and fuel cell); energy efficiency (building, transportation, industry); clean energy transition; decarbonization, digitalization and decentralization of the energy systems; combustion (solid, liquid and gas fuels); alternative and renewable fuels (biogas, syngas, bio-oil, biodiesel, hydrogen); clean combustion technologies; waste to energy (pyrolysis, gasification, anaerobic digestion); sustainability; eco-design; energy-water nexus; energy planning and climate change mitigation assessment; and modeling and simulation of micro grid power systems and air pollution.</p>
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Signature

Name: Chaouki Ghenai

Date: December 16, 2022