UNIVERSIDADE DE ÉVORA

CÁTEDRA ENERGIAS RENOVÁVEIS

CHAIR OF RENEWABLE ENERGIES

POST DOC RESEARCH GRANTS - 7 VACANCIES

20 of September of 2023

A call for tenders is open for 7 Pos-Doc Scholarship (BIPD) within the scope of the project **NEXUS** - Pacto de Inovação – Transição Verde e Digital para Transportes, Logística e Mobilidade (Reference C645112083-00000059), the project **H2DRIVEN** Green Agenda (Reference C644923817-00000037), the project **ATE** - Aliança para a Transição Energética (Reference C644914747-00000023) and the project **NGS** - New Generation Storage (Reference C644936001-00000045), financed by national funds through the "Agendas Mobilizadoras para a Inovação Empresarial" through the "Programa Recuperação e Resiliência (PRR)", under the following conditions:

Scientific area:

SCHOLARSHIP	DOMAIN	AREA
Scholarship 1	Engineering Sciences and Technologies	Electrical, Electronic and Computer Engineering, Other Engineering Sciences and Technologies
Scholarship 2	Engineering Sciences and Technologies	Electrical, Electronic and Computer Engineering, Other Engineering Sciences and Technologies
Scholarship 3	Engineering Sciences and Technologies	Computer and Information Sciences
Scholarship 4	Engineering Sciences and Technologies	Mechanical engineering, Electrical engineering, Electronics and computer science, Other engineering sciences and technologies
Scholarship 5	Engineering Sciences and Technologies	Mechanical Engineering, Other Engineering Sciences and Technologies
Scholarship 6	Engineering Sciences and Technologies	Chemical Engineering, Other Engineering Sciences and Technologies
Scholarship 7	Engineering Sciences and Technologies	Chemical Engineering, Other Engineering Sciences and Technologies

Admission requirements:

Basic requirements:

- Doctorate in Engineering in the area(s) related to the topic (compulsory)
- Proficiency in English (spoken and written)
- Preferably proficiency in Portuguese (spoken and written)
- Experience in preparing technical reports, scientific publications and presentations to disseminate research results.

- Familiarity with writing research and competitive funding proposals in line with the topics covered.

Specific Requirements:

Scholarship 1	**Dual use of land and water surfaces in centralized solar photovoltaic plants**
Requirements	• Extensive knowledge of photovoltaic solar energy systems and electrochemical energy storage systems, with knowledge of different technologies and their applications. • Familiarity with the integration and impact of solar power plants on the territory and dual land use methodologies, e.g. agrivoltaic. • Familiarity with current legislation regarding the generation and storage of renewable energy. • Experience with modeling and simulating photovoltaic energy systems, with or without grid integration. • Good command of programming languages and experience in using mathematical simulation software (preferably Matlab, Python and Labview). • Proficient in data analysis, using statistical methods and software tools. • Experience in preparing technical reports, scientific publications and presentations to disseminate research results. • Familiarity with writing research and competitive funding proposals in line with the topics covered.
Scholarship 2	**Integration of high-capacity storage systems into the electricity generation system: impact and service remuneration models**
Requirements	• Extensive knowledge of photovoltaic solar energy systems and electrochemical energy storage systems, with knowledge of different technologies and their applications. • Familiarity with current legislation regarding the generation and storage of renewable energy. • Experience in modeling and simulating photovoltaic and electrochemical energy storage systems with grid integration. • Familiarity with power and energy management and control strategies for electricity storage systems. • Good command of programming languages and experience in using mathematical simulation software (preferably Matlab, Python and Labview). • Proficient in data analysis, using statistical methods and software tools. • Experience in preparing technical reports, scientific publications and presentations to disseminate research results. • Familiarity with writing research and competitive funding proposals in line with the topics covered.
Scholarship 3	**Data management in the operationalization, operation and maintenance of energy communities**
Requirements	• Knowledge of data management, computer science, information systems or a related field; • Experience in GDPR: the candidate should have a strong understanding of the GDPR framework, including its principles, requirements and implications for data management. • Experience and knowledge in developing and implementing data governance regulations, policies and procedures within energy communities will be valued. This includes an understanding of data classification, data lifecycle management, data retention policies and data sharing agreements.

	• Knowledge of FAIR data practices: understanding of FAIR data practices, ensuring transparency, accountability and responsible data handling within energy communities; • Research skills: the postdoctoral fellow must possess excellent research skills, including the ability to conduct independent research, analyze data and publish academic articles in reputable journals. Experience with research methodologies, experimental design and statistical analysis is valued. • Communication and collaboration: strong written and verbal communication skills are essential, as the postdoc is expected to present research results, write reports and collaborate with colleagues and stakeholders. • Good knowledge of English.
Scholarship 4	**Evaluation of the impact of increasing storage capacity in the electricity generation system in decarbonization scenarios**
Requirements	• Extensive knowledge of energy system storage, with knowledge of different storage technologies and their applications. • Familiarity with heat transfer, fluid dynamics and thermodynamics. • Experience in modeling and simulating energy systems, preferably with a focus on grid integration. • Proficient in data analysis, using statistical methods and software tools.
Scholarship 5	**Solar process heat in high-temperature industrial processes**
Requirements	• Strong knowledge of solar thermal technologies, with a focus on high-temperature processes. • Experience in designing and modeling solar thermal systems for industrial applications. • Familiarity with heat transfer, fluid dynamics and thermodynamics. • Knowledge of energy auditing.
Scholarship 6	**Development of reactors for solar thermochemical processes**
Requirements	• Explicit training in medium and high temperature thermochemistry for biomass gasification and pyrolysis processes. This condition is eliminatory. • Knowledge of the design and development of biomass pyrolysis/gasification reactors • Knowledge of procedures, methodologies and experimental implementation of the interconnection of high temperature Carnot batteries to biomass pyrolysis/gasification reactors • Good command of programming languages and experience in the use of mathematical simulation software (Python is preferred)
Scholarship 7	**Study and experimental test of a "Zero Liquid Discharge" desalination system**
Requirements	• Experience with research methodologies, experimental design and statistical analysis is valued. • Knowledge of thermodynamics and heat and mass transfer processes; • Knowledge of membrane separation processes.

Regarding the "**BIPD**" (postdoctoral scholarship), in terms of the requirements to be verified for their attribution (article 7 of the FCT Research Grant Regulation no. 950/2019) the need for a doctoral degree to have been obtained in the 3 years prior to the date of submission of the application to the scholarship and, in terms of its execution, the fact that it can only be renewed for a maximum period of 3 years.

Work plan:

Scholarship 1	**Dual use of land and water surfaces in centralized solar photovoltaic plants**
Work plan	• Applied research into dual-use surface methodologies for photovoltaic solar power plants, such as agrivoltaic systems, floating photovoltaic systems or others. • Development of models and simulations for dual-use ground or water surface applications. • Develop test methodologies, experimental implementation and data analysis. • Collecting and analyzing data to assess the technical and economic feasibility of implementing these solutions. • Monitoring available opportunities for competitive funding, with support in producing technical documentation to apply for competitive funding.
Scholarship 2	**Integration of high-capacity storage systems into the electricity generation system: impact and service remuneration models**
Work plan	• Applied research into integration and control methodologies for photovoltaic generation and electricity storage systems with grid integration. • Developing models and simulations for the integration and remuneration of these applications in a market context on the national grid. • Developing test methodologies, experimental implementation and data analysis. • Collecting and analyzing data to assess the technical and economic feasibility of implementing these solutions. • Monitoring available opportunities for competitive funding, with support in producing technical documentation to apply for competitive funding.
Scholarship 3	**Data management in the operationalization, operation and maintenance of energy communities**
Work plan	• Ensure compliance with the GDPR when dealing with sensitive data, as in the case of energy communities; • Ensure the principles of FAIR data in the research carried out at the CER, especially within the framework of energy communities with a focus on citizen science; • Scientific publications related to the work carried out;
Scholarship 4	**Evaluation of the impact of increasing storage capacity in the electricity generation system in decarbonization scenarios**
Work plan	• Applied research in energy system storage technologies, focusing on Carnot batteries. • Develop models and simulations to analyze the performance and efficiency of integrating energy storage systems into the grid using Artelys Crystal SuperGrid. • Collect and analyze data to evaluate the technical and economics of grid energy storage solution technology.
Scholarship 5	**Solar process heat in high-temperature industrial processes**
Work plan	• Applied research in high temperature solar thermal processes for industrial applications. • Design and optimize solar thermal systems for high temperature heat generation. • Collaborate with industry partners to understand your specific process needs and develop custom solar heat solutions. • Carry out and monitor experimental work to evaluate the performance and efficiency of solar thermal systems.
Scholarship 6	**Development of reactors for solar thermochemical processes**
Work plan	• Applied research in the development of biomass pyrolysis/gasification reactors and their interconnection with solar concentration systems; • Development and optimization of the interconnection of Carnot batteries to reactors for pyrolysis processes with biomass at temperatures up to 580ºC • Implementation of strategies for the valorization of by-products obtained by the aforementioned processes, namely synthesis gas, bio-oil and chars.

Scholarship 7	Study and experimental test of a "Zero Liquid Discharge" desalination system
Work plan	• Participation in the design, construction and evaluation of the brine treatment process resulting from the solar desalination process, to recover materials and contribute to Zero Liquid Discharge, to be developed within the scope of the project; • Participation in the technical-economic evaluation of the brine treatment processes (ZLD) to be developed within the scope of the project; • Analysis and production of technical documentation related to brine treatment processes for recovery of materials of interest and Zero Liquid Discharge, to be developed during the course of the project;

Applicable legislation and regulations: The granting of the Research Scholarship will be carried out upon the signing of a contract between the University of Évora and the scholarship holder, as set in the template former.fct.pt/apoios/Minuta_Contrato_Bolsa.docx, pursuant to the Research Scholarship Statute (Law No. 40/2004 of August 18 and Decree-Law No. 123/2019 of August 28) and in accordance with the legislation and Regulation of Research Grants of the Foundation for Science and Technology, IP in force, regulation nº950/2019 of December 16, 2019: https://files.dre.pt/2s/2019/12/241000000/0009100105.pdf and other applicable rules.

Place of work: The work will be developed at Renewable Energies Chair at the Polo da Mitra of the University of Évora, under the scientific guidance following researcher:

SCHOLARSHIP/S	Scientific Guidance
Scholarship 1 - Dual use of land and water surfaces in centralized solar photovoltaic plants	Doctor Luís Fialho
Scholarship 2 - Integration of high-capacity storage systems into the electricity generation system: impact and service remuneration models	Doctor Pedro Horta
Scholarship 3 - Data management in the operationalization, operation and maintenance of energy communities	Doctor Afonso Cavaco
Scholarship 4 - Evaluation of the impact of increasing storage capacity in the electricity generation system in decarbonization scenarios	Doctor Pedro Horta
Scholarship 5 - Solar process heat in high-temperature industrial processes	Doctor Radia El Cadi
Scholarship 6 - Development of reactors for solar thermochemical processes	Doctor Diogo Canavarro
Scholarship 7 - Study and experimental test of a "Zero Liquid Discharge" desalination system	Doctor Pedro Horta

Duration of the scholarship(s): The scholarship will have a duration of 12 months, starting on January of 2024. The scholarship contract may be renewed up until the end of the funding project's budget allocation.

Amount of monthly maintenance allowance: The amount of the scholarship corresponds to € 1 741,00, according to the table of scholarships awarded directly by FCT, I.P. in Portugal (https://www.fct.pt/wp-content/uploads/2023/02/Tabela-de-Valores-SMM_2023.pdf), payments being made monthly, by check or bank transfer.

Selection methods: The selection methods to be used will be the following:

- curriculum evaluation (100%)

If deemed necessary by the jury, for additional clarification or tie-breaking purposes, the first two candidates for each grant may be called for a selection interview.

If an interview is used, the evaluation will be as follows:

- curriculum evaluation (85%)
- interview (15%)

Composition of the Selection Jury:

President – Pedro Horta (Coordinating Researcher - Renewable Energy Chair)
1st Jury Member – Luís Fialho (Principal Researcher - Renewable Energy Chair)
2nd Jury Member – Afonso Cavaco (Researcher - Renewable Energy Chair)
3rd Jury Member – Diogo Canavarro (Assistant Researcher - Renewable Energy Chair)
4th Jury Member – Radia Ait El Cadi (Researcher - Renewable Energy Chair)
5th Jury Member – Maria Helena Novais (Researcher - Renewable Energy Chair)

Advertising/notification of results: The final results of the evaluation will be publicized, through an ordered list by final grade obtained posted in a visible and public place at the University of Évora Renewable Energies Chair at the Polo da Mitra, being the candidate (a) approved notified through email.

To ensure the right of prior hearing of interested parties, the Final Classification project will be announced by any written means to all interested parties.

After communicating the provisional list of the results of the evaluation, candidates have a period of 10 working days to express their opinion in a preliminary hearing of interested parties.

Application deadline and submission of applications: The tender is open from 22 of September of 2023 to 31 of October of 2023 and the results of the selection will be published by 13 of November of 2023.

Applications must be formalized, obligatorily, by sending an application letter with the following documents: Curriculum Vitae, certificate of qualifications, reference or recommendation letters and other supporting documents considered relevant.

For the purposes of application, the evidence may be replaced by a declaration of honor signed by the candidate, but the failure to demonstrate that evidence, in the contracting phase, possession of the required degree on the deadline for application or the non-presentation of proof of enrollment in the study cycle or non-degree course, for scholarships with this component, imply the cancellation of the candidate's application.

Academic degrees obtained in foreign countries require registration by a Portuguese Institution in accordance with Decree-Law no. 66/2018, of August 16 and Ordinance No. 33/2019, of January 25th.

The presentation of the certificate is mandatory for the signing of the contract. More information can be obtained at: https://www.dges.gov.pt/pt/pagina/recognition?plid=374

Applications must be sent by email to:

Renewable Energies Chair at the University of Évora
e-mail: catedraer@uevora.pt
Subject: ENG CER Postdoctoral Scholarship Application