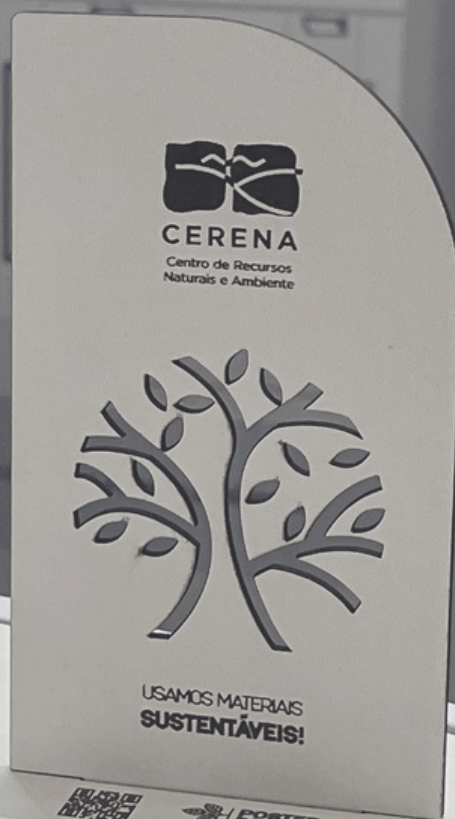


Present and future challenges in natural resources and environmental research



Message from the Organizing Committee

Welcome back to another year of CERENA's seminars!

This year, under the theme *"Present and future challenges in natural resources and environmental research"*, the seminar cycle **brings together researchers whose work sits at the interface of resource use and environmental sustainability**. With the participation of external professionals visiting CERENA, the seminars provide a forum for sharing and discussing current research on environmental challenges, bringing together perspectives on mineral resources, the energy transition, climate action, and environmental responsibility.

These sessions will address the scientific, technical, and societal dimensions of the fields of energy, raw materials, and environment, taking advantage of the multidisciplinary backgrounds of the invited speakers.

In the energy field, particularly, the series aims to explore the technological development of new energy sources, considering the economic dimension and the integration with the research carried out in the three CERENA groups. The seminars will also address environmental challenges, ranging from lithium and sustainable mining in Portugal to public policies for climate action and the management and valorization of mining tailings. The seminars will explore **how research can support more responsible decisions on resource extraction, energy transition, climate action, and environmental protection**.

We believe this seminar cycle fully reflects CERENA's multidisciplinaryity, being an excellent way to continue the celebration of the center's 20th anniversary. **We invite everyone in the community to join us!**

The Organizing Committee
Maria de Lurdes Dinis
João Gomes
Rui Galhano

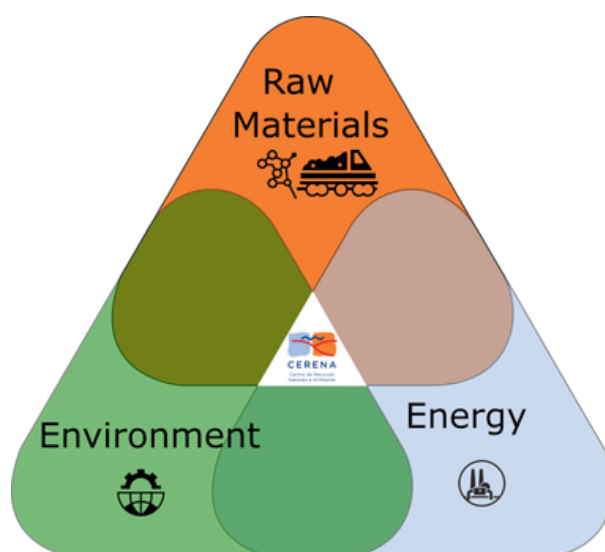
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Sustainable Energy in Port Infrastructure: A roadmap with strategic opportunities and challenges!

24 September 2026

Jaime Filipe Borges Puna is a member of the board of Directors of the Port of Sines and Algarve since March 2025, being responsible for Finance, Procurement, Infrastructure, Public Work, Security, Protection, Environment, Energy Transition, and Electrical Networks.

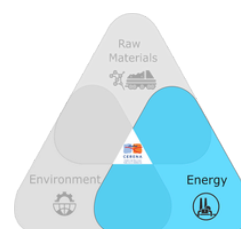


Jaime holds a BSc in Chemical Engineering from Instituto Superior de Engenharia de Lisboa (ISEL), an MSc in Landscape and Environmental Planning from Faculdade de Ciências e Tecnologia (Universidade Nova de Lisboa), and a PhD in Chemical Engineering from Instituto Superior Técnico. He is an auxiliary Professor at the Chemical Engineering Department of ISEL, an integrated member of CERENA, and a member of the Center of Chemical Engineering Studies of ISEL.

This oral presentation will focus on the main challenges related to the energy transition in national ports, particularly in the largest national port, the Port of Sines, within the framework of the national strategy for the port sector "Ports 5+" and the state of the art in this area.

Strategies and technological options for the decarbonization of the port sector, in terms of electrification, mobility and e-fuels for shipping, along with the potential and opportunities of green hydrogen and renewable energy communities (RECs), will be other topics to be addressed. Objectives and targets up to 2050, with a view to achieving carbon neutrality and net-zero, will also be explained.

12.30 | Room C13 IST | Room F405 FEUP



The electricity in Portugal: Evolution of demand, safety of supply and system costs

29 October 2026

João de Jesus Ferreira is an Eletrotecnic Engineer by Instituto Superior Técnico, with a specialization in Energy and Potency Systems. He holds a Master's in Policy, Economy and Energy Planning from Instituto Superior de Economia and from Instituto Superior Técnico. He also holds a Master's in Electronic and Computer Engineering from Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa.

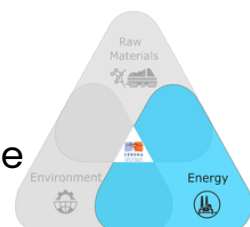


Currently, João works as an independent consultant and specialist in policy, economy, planning, production, and rational and efficient utilization of energy. Additionally, he works in research, technical analysis, formation, and dissemination in the energy field. Throughout his career, João has worked in the public and institutional setting, working as a Consultant in the Environmental and Natural Resources field, and he has worked in the business sector, namely in Climaespaço and AMEC SPIE Portugal.

This seminar will analyze the evolution of energy consumption in Portugal, framing it in the broader transformation of the energy system, both at the national and European levels. There will be a focus on the expected growth of electricity demand as a result of the electrification of the transport network, climatization, industrial processes, as well as other uses currently dependent on fossil fuels. This evolution will be analyzed considering the current structure of the electricity producer capacity of the Portuguese system, which is characterized by an elevated participation of renewable energy sources and a progressive diminishing of classical thermal production. The presentation will focus on the distinction between energy produced and effectively available potency, analyzing the challenges resulting from variable wind and solar energy, storage, and the interconnection between the electric network and system services. The effects of electrification concerning consumption, safety of supply, and the investments supported by the consumers will also be discussed. The seminar will conclude with a reflection on the need for a true energetic national plan, based on scenarios technically consistent with the demand, production capacity, storage, and other total costs of the system, considering the safety of the supply, economic competitiveness, and environmental goals.

12.30 | Room C13 IST | Room F405 FEUP

This seminar will be held in Portuguese



Hydrogen and renewable gases production from waste materials

26 November 2026

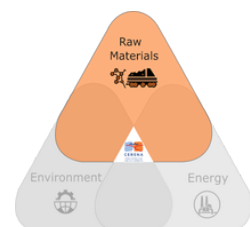
Paulo Brito is Professor Coordinator at the Superior School of Technology, Management and Design, of the Instituto Politécnico de Portalegre. Currently, he works as Coordinator of the Center of Research in Valorization of Endogenous Resources - VALORIZA. His main research areas are related to bioenergy, environmental treatment of waste, material corrosion, and galvanic production of energy and hydrogen.



Paulo has a bachelor's degree in Chemical Engineering, in the Industrial and Process branch, from Instituto Superior Técnico. He holds a master's in Corrosion Science and Engineering from the University of Manchester. He holds a PhD in Chemical Engineering from Instituto Superior Técnico, in the field of electrochemistry, focusing on galvanic cells. Paulo holds an MBA and has an Aggregation in Civil Engineering from Universidade da Beira Interior.

The presentation aims to address the main methods of producing hydrogen and renewable gases through waste valorization, with a particular focus on thermal gasification technologies. Projects currently underway will also be presented.

12.30 | Room C13 IST | Room F405 FEUP



Public policies, climate action and natural resources: from research to decision

17 December 2026

João Pedro Soeiro de Matos Fernandes is a Senior Counsel at Abreu Knowledge Institute (Instituto de Conhecimento) and a Full Professor at FEUP, focusing on sustainable engineering, physical planning, and environmental assessment. João holds a Civil Engineering degree, with a Master's in Transport.

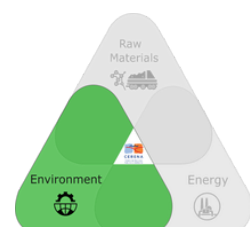


Throughout his career, João has held leadership and technical positions across public administration, consultancy, and government. He has worked in land and transport planning, urban and spatial strategy, and infrastructure development. Between 2015 and 2022, he served as Minister of Environment of Portugal, later expanding his responsibilities to Minister of Environment and Energy Transition and ultimately Minister of Environment and Climate Action. Today, he combines his professional practice with teaching and sharing knowledge to help shape more resilient and sustainable communities and territories.

The Earth, or rather the biosphere, is the only provider of resources to maintain the brutal growth of population we have been observing in the past 60 years. The current use of natural resources is not only a consequence of population growth, but it is also stressed by concentration, by new demands for comfort, by new ways of consuming. And for this reason, the resolution of new problems that invade our daily news and that seem so fair to us – for example, the housing crisis – is very bad news for the climate and natural resources.

We must face the future with different tools than those we have used in the past.

12.30 | Room C13 IST | Room G129 FEUP





CERENA

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Present and future challenges in natural resources and environmental research



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