

## Evaluation Panel: NATURAL SCIENCES - Earth and Atmospheric Sciences and Climate Change

### Panel Members

Hans Thyb (Chair)	Eurasia Institute of Earth Sciences, Istanbul Technical University, Maslak, Istanbul, Turkey
Bilal Haq	Smithsonian Institution, Washington DC, United States of America and Sorbonne University, Paris, France
Daniel Conley	Plymouth University, United Kingdom
Donald Dingwell	Ludwig-Maxmillians University of Munich, Germany
Irina Artemieva	University of Copenhagen, Denmark
Ole Hertel	Aarhus University, Denmark

### R&D Units

Centro de Estudos do Ambiente e do Mar (CESAM)	Universidade de Aveiro (UA)
Centro de Geociências (CGEO)	Universidade de Coimbra (UC)
Centro de Investigação da Terra e do Espaço da Universidade de Coimbra (CITEUC)	Universidade de Coimbra (UC)
GeoBioCiências, GeoTecnologias e GeoEngenharias (GeoBioTec)	Universidade de Aveiro (UA)
Instituto de Ciências da Terra (ICT)	Universidade de Évora (UE)
Instituto de Investigação em Vulcanologia e Avaliação de Riscos (IVAR)	Universidade dos Açores (UAçores)
Instituto Dom Luiz (IDL)	Faculdade de Ciências da Universidade de Lisboa (FC/ULisboa)

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**R&D Unit:** GeoBioCiências, GeoTecnologias e GeoEngenharias (GeoBioTec)

**Coordinator:** Fernando Joaquim Fernandes Tavares Rocha

**Integrated PhD Researchers:** 71

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**Overall Quality Grade:** VERY GOOD

### Evaluation Criteria Ratings

- (A) Quality, merit, relevance and internationalization of the R&D activities of the Integrated Researchers in the R&D Unit Application: 4
- (B) Merit of the team of Integrated Researchers: 4
- (C) Appropriateness of objectives, strategy, plan of activities and organization: 3

**Base Funding for (2020-2023):** 1035 K€

### Recommended Programmatic Support

PhD Fellowships: 9

Programmatic Funding: 600 K€, including for 2 (Junior) New PhD Researchers Contracts.

### Justification, Comments and Recommendations

The GeoBioTec Center is an interdisciplinary institution that brings together specialists in a broad range of academic and applied geoscience disciplines. The breadth and quality of activities and the scale of infrastructure within the GeoBioTec consortium is truly remarkable. The five research groups are highly complementary with their research focus on geochronology, geochemistry, paleontology, tectonics, climate and soil research, medical geology, ecology, environmental geosciences, geotechnical sciences and geomaterials. With these the GeoBioTec Center has the capability to be an international competitor in broad areas of investigation of the physical, chemical and biological implications of resource management and sustainability.

A number of research subjects covered by the GeoBioTec Center are unique in Portugal and are of a high national importance. Among academic projects, some important ones include radiogenic isotope geology (centered around a nationally unique radiogenic isotope laboratory), geodynamics of the Portuguese, Brazil and Iran crustal provinces, marine geology, and paleontology. The major focus of the applied research is on sustainable use of mineral resources, geo-environmental problems (including urban geochemistry, environmental problems related to abandoned mines, agro-chemicals, dust pollution, and waste disposal), environmental geophysics and geochemistry, marine geobiology, medical geology, geomaterials, soil sciences, and geophysical support to cultural heritage. The societal relevance of the work with respect to the national mining sector and ecology is clearly defined and is of unquestionable national importance. Extending the research focus to agro-geosciences and soil sciences promotes the national importance of the Center and sustainability of its development.

Coming with this great breadth is the tremendous challenge of setting priorities, measuring merit, establishing transversal synergies between the components of the consortium, and extending collaboration within and outside the consortium beyond the experimental infrastructure. The internationalization of the efforts should continue to be in focus and its role should be emphasized.

The GeoBioTec Center has achieved the critical mass of integrated researchers, who have the capability to perform at an internationally competitive level of achievement. To a great extent this is already the case as documented by their level of research and publication activity in a broad range of geoscience subdisciplines. Highly variable proportions of academic and applied research by the members of the consortium lead to a broad spectrum of individual contributions to the GeoBioTec Center activities and to fund raising. The measures of merit of the consortium participants are a clear indication of specific measures to be implemented and very welcome. Professional publications and business contracts of the Center cover a broad spectrum of topics, including participation of the Center in the national and international activities in the mining sector and in several collaborative and international research projects in academic, public and private sectors. Fund raising activity from various sources is overall high, and fund raising from academic grants should be boosted. The GeoBioTec Center has a good gender balance of the team at all levels, and the change of generations should be considered in the near future.

The GeoBioTec Center sees itself focusing on multidisciplinary approach to scientific and technological aspects of the life cycle of mineral and forestry resources focused on primary raw materials for environmental and economic sustainability, with particular emphasis on industrial minerals, raw materials, soil and water resources for agroforestry, geotourism and geoheritage. The Center isotopic lab, is widening its scope that includes Rb-Sr and Sm-Nd studies, unique in the country, in addition to traditional analyses. Strategic focus of the GeoBioTec Center will continue to be on a combination of applied and fundamental research. The measures by which this will be accomplished, beyond the specific research areas, include research themes and coordination policies. Synergy between the geographical poles and the research teams within the GeoBioTec Center is not yet fully achieved, and requires further development. Plan to booster publication activity and internal collaboration within the consortium is very welcome and several types of activities are planned to involve different groups into research proposals, supervision of PhD students, and industry contracts. Planned external professional activities include continued collaboration with the most important national mining projects with plans to strengthen the cooperation with industry and involve international partners to training of PhD students.