

# EVALUATION OF RESEARCH UNITS

## Notes on the evaluation of research units from the *Conselho Científico das Ciências Exatas e Engenharias da FCT*

07/07/2023

### Quick overview

FCT should previously ask all research units which are the scientific areas, mainly the multidisciplinary ones, that they possess within their main and general research to ensure that they are properly evaluated.

The evaluation process should be carried out by panels of independent experts, from abroad, with expertise in the respective research fields.

There should not be any kind of quotas for grading the research units in each area; the grading should be uniquely based on the assessment of the evaluators. However, special care should be taken for the units in interdisciplinary areas, as there is a high risk of unfair grading in comparison with other units in the traditional areas related/covered by the interdisciplinary areas. To overcome this issue it is recommended that evaluators' panels for interdisciplinary areas have experts that also take part in the related/covered areas evaluators' panels. Moreover, the final grading of the interdisciplinary areas' units should be coordinated among the panel for the respective interdisciplinary area and the panel(s) for the traditional related/covered area(s).

There should be good evaluation guides both for evaluated and evaluators, with clear instructions to be followed, and which are specifically applied to the Portuguese reality. FCT must also ensure that the instructions are not ignored by the panel and an evaluation report that clearly violates the guidelines is issued.

The assessment should take into consideration the FCT pluriannual funding awarded to each research unit in the previous period. This is essential to ensure a fair evaluation process as the FCT funding largely varies from unit to unit. Only evaluating the research units in face of the expectations created by the FCT funding previously obtained can ensure a fair assessment, as units that have been awarded lower funding cannot be expected to attain results at the same level as units that have been awarded significantly higher funding. For that both base funding and programmatic funding in the previous period should be considered.

On-site visits should be conducted for all research units to allow the experts to interact with researchers, assess the research infrastructure, and gather additional information.

Additionally, FCT should observe and adopt the principles put forward by the DORA and CoARA research assessments.

Once a panel makes a first proposal of evaluations results, FCT must ensure that: (i) a drastic change in the evaluation result of any research unit when comparing to past evaluations is duly justified; (ii) areas in which the evaluation is biased (i.e. much better or much worse than national average) is duly justified based on national quantitative indicators for the area (such as funding, international rankings or bibliometric indicators).

Finally, it is mandatory that any redress / appeal procedure does not have as consequence that no funding is provided to the respective research center (this would be a clear demonstration of an unfair evaluation process, given the consequences for the party).

## **Background**

One of the key tasks of *Fundação para a Ciência e a Tecnologia* (FCT), is to evaluate research units and allocate funding based on their performance and potential.

The evaluation of research units conducted by FCT serves multiple purposes. It aims at assessing the scientific quality, productivity, and impact of research carried out by these units. It also helps to identify strengths, weaknesses, and areas for improvement within the Portuguese research landscape. Moreover, the evaluation serves as a basis for allocating financial resources to support and promote the most competitive and promising research units.

Evaluating scientific research units is an essential process for assessing their performance, productivity, and impact. These evaluations play a crucial role in determining the quality of the research being conducted, allocating funding, and making informed decisions regarding resource allocation, policy-making, and strategic planning.

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The evaluation process involves a comprehensive analysis of various aspects of a research unit, including its scientific output, collaborations and networks, funding raising, infrastructure and facilities, research impact, leadership and governance, evaluation of researchers and stakeholder engagement, as detailed below.

1. **Research Output:** one of the primary indicators of a research unit's performance is its scientific output. This includes publications in reputable peer-reviewed journals, patents, conference presentations and other forms of dissemination. The advanced formation of young researchers, such as post-doc fellow researchers, will be considered of high relevance. The number of PhD and MSc theses and the supervision of graduation students will be also highly considered . The quantity, quality, and impact of these outputs are assessed to gauge the productivity and significance of the research being conducted. Metrics such as citation counts, journal impact factors, and h-index are often used to measure the influence and visibility of the unit's research within the scientific community. However, if we look into DORA's

and CoARA's recommendations (see below), we should reduce the importance of such metrics in the assessment, making sure that the assessment is primarily based on quality aspects and on the contents and scope of the research directly assessed by the evaluators. Metrics can still be used, but according to a deep knowledge of the respective research area and always in a transparent and responsible way.

2. Collaborations and Networks: collaborations and networks are also important aspects of evaluation. Research units are often evaluated on their ability to foster interdisciplinary collaborations, both within their institution and with external partners. Collaborative efforts enhance the exchange of knowledge, resources, and expertise, leading to more innovative and impactful research outcomes. Evaluators consider the diversity and depth of collaborations, as well as the outcomes and benefits derived from these partnerships.
3. Funding Raising: funding is a critical factor in evaluating research units. The ability of a unit to secure competitive grants and attract research funding is indicative of its credibility and potential. Evaluators analyze the unit's success rate in obtaining funding, the diversity of funding sources, and the magnitude of financial support. They also consider how effectively the funds are managed and utilized, ensuring that resources are allocated optimally to support high-quality research projects and scientific results.
4. Infrastructure and Facilities: infrastructure and facilities available to a research unit are evaluated to determine the extent to which they support cutting-edge research. Adequate laboratory spaces, state-of-the-art equipment, and access to relevant technologies and databases are crucial for conducting high-quality research. Evaluators assess the availability and quality of infrastructure and its alignment with the research goals and needs of the unit.
5. Research Impact: assessing the societal impact of the research conducted by the unit is important. Evaluators look into how research outcomes contribute to addressing societal challenges, advancing knowledge, and improving the well-being of communities. They consider the dissemination of research findings to policymakers, industry, and the public, as well as the unit's engagement in knowledge transfer and the translation of research into practical applications.
6. Leadership and Governance: the leadership and governance structure of the research unit should be evaluated too. The effectiveness of leadership in fostering a conducive research environment, promoting a rich scientific environment, supporting the professional development of researchers and promoting interdisciplinary collaboration are important topics and should be assessed too. The unit's strategic planning, organizational structure, and policies that encourage research excellence and integrity must be considered.
7. Evaluation of Researchers: it is of major importance to assess the qualifications, expertise, and productivity of researchers within the unit. To consider factors such as academic degrees, publication records, citation metrics, and external recognition through awards, honors, and fellowships, as well as evaluate the unit's support for the career development of researchers and their contribution to the research community.
8. Stakeholder Engagement: evaluation of the unit's engagement with stakeholders, including industry, policymakers, community organizations, and the public should be

taken into account. As it should be how effectively the unit disseminates research findings, collaborates with stakeholders, and addresses societal needs and priorities.

The evaluation of scientific research units is typically carried out by expert panels comprising experienced researchers, who possess in-depth knowledge of the research domain. These evaluations can be conducted periodically, such as every few years, to monitor the progress of research units and identify areas for improvement. The findings and recommendations from the evaluations provide valuable insights for research units, funding agencies, and policymakers, facilitating evidence-based decision-making and fostering a culture of continuous improvement in scientific research.

**DORA**, which stands for the **Declaration on Research Assessment**, is an initiative that aims at improving the evaluation of scientific research by promoting the use of more meaningful and responsible metrics. Developed in 2012, DORA recognizes the limitations of traditional metrics, such as journal impact factors and citation counts, in accurately assessing the quality and impact of research. Instead, it advocates for a more comprehensive and nuanced approach to research evaluation. Some key recommendations put forward in DORA:

- Focus on the quality and content of research.
- Consider a broader range of research outputs.
- Use multiple indicators and qualitative assessments.
- Mitigate biases and contextualize evaluations.
- Promote transparency and responsible use of metrics.
- Foster culture change and professional development.

By endorsing these recommendations, organizations and individuals can contribute to a more fair, accurate, and comprehensive evaluation of scientific research. The adoption of DORA principles helps create an environment that values the quality and impact of research, promotes interdisciplinary collaboration, and supports the pursuit of scientific knowledge for the betterment of society.

**CoARA** stands for **Coalition for Advancing Research Assessment**. It is a collaborative initiative aimed at improving the evaluation and assessment of research. CoARA brings together various stakeholders, including researchers, funders, publishers, and institutions, to advocate for responsible and effective research evaluation practices. The coalition seeks to address the limitations of traditional metrics and promote a more comprehensive and diverse approach to research assessment. CoARA's work aligns with broader efforts to reform research evaluation practices, such as the San Francisco Declaration on Research Assessment (DORA) and other similar initiatives.

CoARA focuses on several key areas to drive change in research assessment:

- Recognition of multiple research outputs.
- Responsible metrics.
- Transparency and openness.
- Culture change and professional development.
- Collaboration and knowledge sharing.

By advocating for responsible, transparent, and inclusive assessment practices, CoARA strives to create an environment that values the quality, diversity, and societal impact of research.

### **Recommendations**

The evaluation process should typically involve a comprehensive assessment of the research unit's activities, research outcomes, infrastructure, and human resources. The evaluation criteria may vary over time, but generally they should include factors such as scientific publications and other research outcomes, such as datasets, prototypes, demonstrators etc., citations, collaboration networks, participation in international research projects, technology transfer, and societal impact. The units should be evaluated in comparison to their peers working in some research area, both nationally and internationally, to provide a benchmark for performance.

The evaluation process should be typically carried out by panels of independent experts, from abroad, with expertise in the respective research fields. It would be important that the FCT previously asks the research units which are the scientific areas, mainly the multidisciplinary ones, that they possess within their main and general research to ensure that they are properly evaluated. These panels should assess the research units based on the provided documentation, which includes research outputs, project reports, funding applications and raising, and other relevant indicators. On-site visits should also be conducted to allow the experts to interact with researchers, assess the research infrastructure, and gather additional information.

Based on the evaluation results, research units are typically graded into different levels or tiers. The highest-performing units should receive the highest level of funding, while those with lower rankings should receive reduced or no funding. FCT's evaluation process aims to be transparent, fair, and rigorous, ensuring that funding is allocated to the units with the greatest potential to contribute to scientific advancement and societal impact.

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### **Conclusion**

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