EVALUATION OF THE PERFORMANCE OF THE SCIENTIFIC REPOSITORY IN A HIGHER EDUCATION INSTITUTION - CASE STUDY

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Abstract

The importance of disseminating knowledge in open access platforms and the recent introduction of the concept of open science have gained importance in the two first decades of the 21st century. Open access knowledge and information repositories are the most obvious example of this trend which is gaining more and more favor in the context of scientific research and publication. Institutional scientific repositories are invaluable tools for communicating and disseminating knowledge. The main goal of this study was to evaluate the evolution of the Polytechnic Institute of Castelo Branco Scientific Repository (RCIPCB) from its foundation in 2010 to the end of 2023. As this work was a follow-up, a comparison was made with the data collected and published in previous studies with the same goal carried out in 2012 and 2014 on the RCIPCB. A survey was drawn up and distributed by email to 220 teachers/researchers (FTEs) from the six higher education schools of the Castelo Branco Polytechnic Institute (IPCB). The data collected was processed using the IBM SPSS statistical software. There were 37.7% of valid responses. The majority of respondents were: over 50 years old (63.9%), male (56.6%), knew about the RCIPCB (98.8%), knew the Open Access Movement (78.3%) but 19.3% of them didn't use the RCIPCB. Of the 79.5% of respondents who use the RCIPCB, 33.3% reported using it to consult and download documents, 18.1% to archive documents and 1.5% to check their own scientific production. However, on a scale of 1 to 5 where 1 is "Not at all important" and 5 is "Essential", 48.2% gave the RCIPCB a rating of 5 and 31,3% a rating of 4. The majority of respondents indicated the "Visibility of the institution" (24.6%) and the "Reputation of the institution as a producer of science" (21.7%) as a result of the repository's impact. Regarding the concepts of Open Access and Open Science, 81.3% of respondents said that they were complementary concepts, revealing some relative knowledge about the two concepts. Although more than 10 years have passed since the beginning of the RCIPCB, the results obtained show that there is a need to continue making efforts to inform, train and motivate IPCB teachers/researchers about the advantages and benefits of open access to knowledge and, consequently, the advantages to deposit the documents they produce and publish in the open access repository. In addition, the results indicate a lack of information on institutional, national and supranational open access policies, which also shows the need for information to reduce the discrepancy between the scientific production of the institution's teachers/researchers and its availability in open access RCIPCB.

Keywords: Scientific repository, open access, performance.

1 INTRODUCTION

Globalization and the Internet are closely linked [1]. This link is fundamental to developing cultural, social and other movements, including Open Access (OA). The Open Access movement is extremely important because it facilitates access to information, promotes its dissemination and use free of charge, and favors the use of scientific production [2], whose mode of publication has changed with the advent of the Internet [1]. Open Access advocates open access to all knowledge. It can benefit society in many ways. Through Open Access, science, culture, medicine and technology can all benefit from the sharing of knowledge that is produced and recorded in a continuous process. Open access to knowledge also has an economic and social impact. It allows information to be shared between different fields of knowledge, promoting interdisciplinarity and the exchange of knowledge [3].

Institutional scientific repositories are essential and valuable tools for the communication and dissemination of scientific knowledge [4]. Based on the principles of Open Access, institutional repositories have been given

new impetus by the Open Science policies they help to implement. Repositories are an inseparable part of the process of access to and use of scientific knowledge.

Lynch [5] defines a repository as "*a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members."* They are collections of full-text documents that are available on their own platforms via the Internet and can be accessed free of charge at any time [6]. Narayan and Luca [7] state that institutional scientific repositories have played a key role in helping to break down institutional barriers to scholarly communication. Other authors [8] add that OA repositories are essential strategic elements in promoting the visibility and accessibility of organisations' intellectual output.

Over the last two decades, institutional, thematic and other repositories have sprung up in many countries. The OpenDOAR portal (https://v2.sherpa.ac.uk/opendoar/) shows the distribution of repositories all over the world. In Portugal, it can be found on the portal of the RCAAP (https://www.rcaap.pt/directory.jsp).

Based on the principles of Open Access, repositories aggregate, preserve and disseminate digital content, making it accessible to any citizen, anywhere in the world, as long as they have access to the Internet, and contribute to preserving the scientific memory, advocating the principle of free and unrestricted access to the full text of documents and information, and to creating more and better knowledge, driving the progress of science [9]. Because they are often aligned with research funding and scientific research systems that promote improvements in the processing, collection, access and preservation of information, some authors consider them to accelerate the process of knowledge diffusion [10].

In order to support repositories by giving them greater expression, visibility and credibility, in addition to financial reasons, national science/open access policies, mandatory repository policies, legislation, national and supranational rules and, more recently, Plan S ([11], [3]) have been developed.

The process of creating, managing and feeding the repositories of higher education institutions (HEIs) is well underway. However, this process has had some difficulties and the rate of deposit into repositories has not kept pace with the dynamics of their creation and implementation [10]. In fact, Bamigbola [12] states that one of the most significant challenges for repositories is the attraction of content. Repository managers are confronted with problems of various kinds, such as authors' lack of knowledge about the repository and its potential for visibility ([12], [13]), the reach and usability of scientific production, mistrust of Open Access, fear of plagiarism, copyright and lack of knowledge about the rules of availability ([14], [12], [15]), and difficulties in monitoring compliance with the rules of publication in repositories [11]. For some authors [16], despite the enormous progress made by Open Access, there are still doubts about its benefits. Kodua-Ntim [13], in his work on repositories, also points to researchers' lack of knowledge and understanding of Open Access as one of the barriers to using repositories to deposit their scientific output.

Although the work of repository managers is crucial in developing strategies, implementing infrastructures, selecting software, attracting content from researchers [17] and retaining authors, the benefits of their use in terms of dissemination, accessibility and preservation of the knowledge produced, repositories do not always accommodate all the scientific production of their institutions. This problem has also been identified by Kim [18], although repositories seem to be positively related to the number of citations of documents [19]. For these reasons, it is important to continue to make researchers aware of the nature and scope of repositories in terms of knowledge dissemination. This will enable them to participate actively in the process of creating new knowledge, free of charge, openly and without constraints.

This study was carried out in the six higher schools of the Polytechnic Institute of Castelo Branco. Its objectives were to verify the level of knowledge, acceptance and use of the Scientific Repository of the Polytechnic Institute of Castelo Branco (RCIPCB) by its teachers and researchers, 14 years after its implementation. It also aimed to verify the knowledge of IPCB teachers and researchers about international, national and local institutional instruments for making scientific production available in open access institutional repositories. It was a follow-up study that aimed to evaluate and compare the current situation with the results of the RCIPCB's performance obtained in studies published in 2012 and 2014 by Rodrigues and Rodrigues.

2 METHODOLOGY

A questionnaire survey (23 questions) to determine the level of knowledge and use of the RCIPCB was distributed to the Full full-time equivalent (FTEs) teachers and researchers at the six IPCB higher schools. The survey was a GoogleDocs form and was distributed by e-mail. With regard to data

protection, special care was taken in the drafting of questions with socio-demographic information so that it would not be possible to establish relationships with respondents. The only personal information that was requested was in the first part of the questionnaire: age (wide range) and gender, so there was no need for submission to the Ethics Committee of the Polytechnic Institute of Castelo Branco.

Information on the teacher/researcher's school of origin was not requested. The questions were organized according to scientific fields as follows: Life and Health Sciences (LSH), Exact and Engineering Sciences (EEC), Natural and Environmental Sciences (NES), Social Sciences and Humanities (SSH). The second part of the questionnaire included questions about knowledge and use of the repository, the importance attached to it (Likert scale), the extent of the repository's impact, and knowledge of local, national and international OA policies. Respondents participated on a voluntary basis. The questionnaires were distributed to 220 teachers/researchers (FTE). Counts were made, percentages were calculated and the data were statistically processed using the IBM SPSS software, Ver. 21.

3 RESULTS AND DISCUSSION

A total of 83 valid responses were received, representing 37.7% of all respondents. The majority of respondents are between 41-50 (31.3%) and 51-60 (36.1%) years old, are male (56.6%), and belong to the scientific fields of SSH (36.1%) and EEC (25.3%) (Fig. 1), and 98.8% ($p<0.05$) of respondents stated that they were aware of the IPCB Scientific Repository. In studies conducted in 2012 and 2014, Rodrigues and Rodrigues ([20], [21]) found similar results in terms of age, scientific field (mostly SSH) and knowledge of the institutional repository. At that time, 98.9% of respondents indicated that they were aware of the repository. Similar results were found in 2023 by Jayakananthan and Jeyaraj [22] at the Eastern University - Sri Lanka.

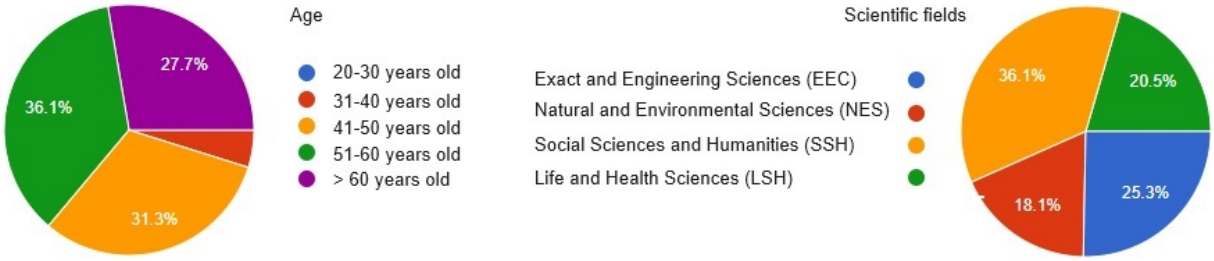

Figure 1. Age and Scientific Field of the Respondents (n=83)

Of the 98.8% of respondents who said they were aware of the RCIPCB, 78.3% ($p<0.05$) knew about the Open Access Movement (OAM), 75.6% were aware the concept of Open Science, and 81.3% ($p<0.05$) considered the Open Access Movement and Open Science concepts to be complementary indicating some knowledge of them. It would be necessary to ask further questions to get a more in-depth knowledge of this aspect. However, the lower percentage of teachers who indicated that they knew about OAM, compared to the results found in 2012 and 2014 ([20], [21]), were 100% of the respondents indicated having knowledge of OAM is worrying and indicates the need to strengthen strategies to improve teachers/researcher's knowledge on this issue. Of the respondents who indicated that they were not aware of the OAM, 51.0% were over 50 years of age and the majority were teachers/researchers in the EEC and SSH scientific fields.

Regarding the question "Are you an institutional repository user?", 19.5% of respondents indicated that they do not use the repository. These figures show a significant improvement in the use of this resource compared to the studies carried out in 2012 and 2014 by Rodrigues and Rodrigues ([20], [21]). They are in line with the evolution of the internal user records at the RCIPCB. However, we believe that the percentage of repository non-users obtained in this study is still high and may be related to the data registration user in the RCIPCB; 18.1% of respondents indicated that they were not registered and did not use the RCIPCB, and 15.7% indicated that they had no documents of their authorship or co-authorship in the repository. It is felt that there is still much to be done to improve the use of the institutional repository.

Of the 66 respondents who identified themselves as RCIPCB users, 10.6% are not registered in the repository and therefore cannot use the self-archiving option.

In terms of frequency of use, of the 66 respondents who said that they were users of the RCIPCB, 42.4% said they accessed the institutional repository once a month and only 1.5% reported accessing daily

(Fig. 2). These figures are very different from those collected by Rodrigues and Rodrigues [21], where 37.2% said they accessed it daily. However, the explanation may lie in the existence of interoperability with other systems. In addition, 19,7% said they rarely accessed it and 1.5% never accessed, showing little or no interest in the content of the RCIPCB or a lack of adaptation to it, which is in line with the findings of Korkuvi, Budu and Owusu-Ansah [16], but contradicts the data collected by Rodrigues and Rodrigues [21]. Also Fig. 3 shows that 33.3% ($p<0.05$) of the respondents said they used the RCIPCB to consult and download documents, 18.1% to archive documents, 1.5% to check their own scientific production and 39.4% for all activities (consult, download, archive and check their own scientific production). The results of this study are similar to those obtained by other authors ([12], [16], [20], [21]).

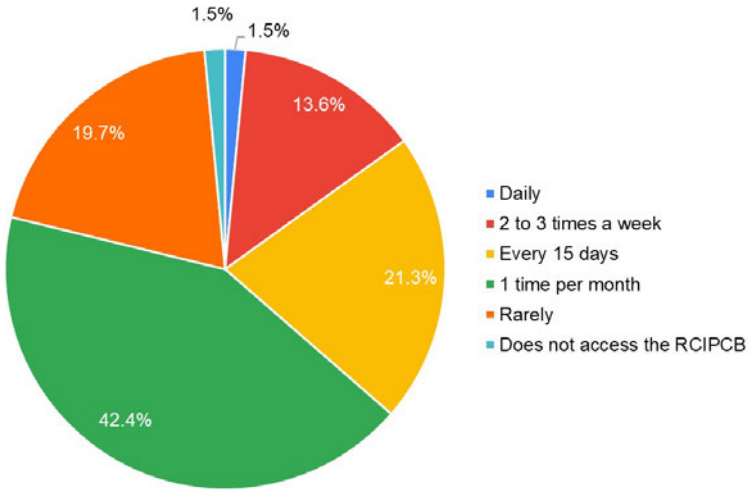

Figure 2. Frequency of use of the RCIPCB (n=66)

Also, Fig. 3 shows that 33.4% of the respondents said they used the RCIPCB to consult and download documents, 22.7% to archive documents, 1.5% to check their own scientific production and 39.4% for all activities (consult, download and archive documents and check their own scientific production) which shows that teachers/researchers recognise and trust the institutional repository. The results of this study are similar to those obtained by other authors ([12], [16], [20], [21]).

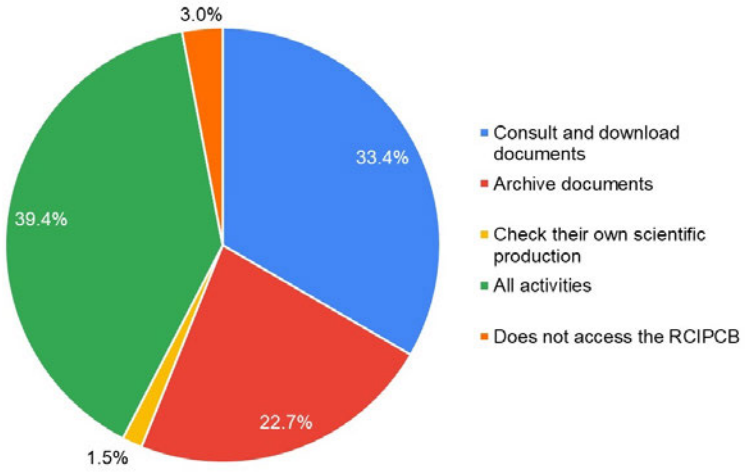

Figure 3. Type and purpose of the use of RCIPCB (n=66)

Of the 85.5% of teachers/researchers who have archived documents in the repository, 57.1% reported using self-archiving and 38.0% used mediated archiving. These results show an increase in self-archiving compared to previous studies ([20], [21]). The opposite situation was reported by Korkuvi, Budu and Owusu-Ansah [16], who found a low level of adherence to self-archiving.

When asked about the number of documents archived in 2022 as an author, 38.6% of teachers/researchers reported 0 documents. One of the reasons for this high percentage may be related to shared authorship of documents, where only one of the authors archives the documents themselves or makes the document

available for mediated archiving. Only 8.4% reported having archived 7 to 10 documents in 2022. It should also be noted that 34.9% of teachers/researchers reported having deposited between 1 and 3 documents in the RCIPCB in 2022. The most frequently cited type of document was "articles" (50.6%), which is in line with results obtained by other authors ([2], [21]). Compared to the previous study conducted in 2014 [21], there was a decrease in the percentage of respondents who had not deposited any documents in the repository. However, it is still very high in relation to the total sample. It should be noted that 9.6% said that they were not available to make further deposits, a lower percentage than Rodrigues and Rodrigues [21] found for the same parameter.

In terms of the importance they attach to the repository, on a scale of 1 to 5, with 1 being 'Not at all important' and 5 being “Essential', 48.2% give it a rating of 5 and 31.3% a rating of 4 (Fig. 4). Rodrigues and Rodrigues [21] found similar results. This means that the idea of the repository as an important tool for aggregating and sharing institutional scientific production seems to be well-established among IPCB teachers/researchers.

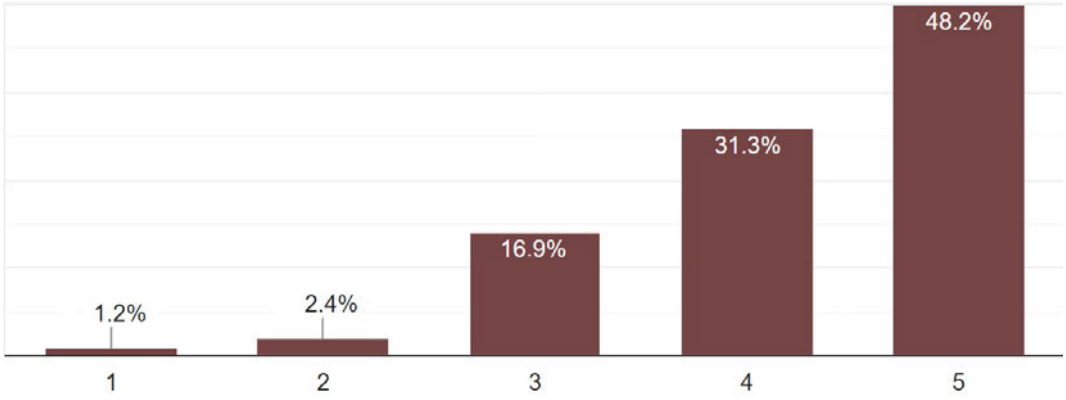

Figure 4. The importance of the RCIPCB where 1 is not important at all and 5 is essential (n=83)

In terms of the impact of the repository on the IPCB (Fig. 5), the majority of respondents cited 'Visibility of the institution' (24.6%), followed by 'Reputation of the institution as a producer of science' (21.7%) and 'Preservation of knowledge' (14.9%). The results obtained are in line with those observed by Rodrigues and Rodrigues ([20], [21]), showing a certain lack of awareness of the potential of the repository in relation to the individual position of each teacher and researcher in the context of scientific production and publication. This is confirmed by the low percentage of respondents who mentioned "Reputation of authors", only 8.6%. This may indicate a lack of confidence in the repository, which was also mentioned by other authors [14]. Also, in this question, 9.7% of respondents indicated "Contribution to AVADOC", the Evaluation of the Performance of the Teaching Staff at the Polytechnic Institute of Castelo Branco (AVADOC), which is the institutional system for the evaluation of teachers/researchers.

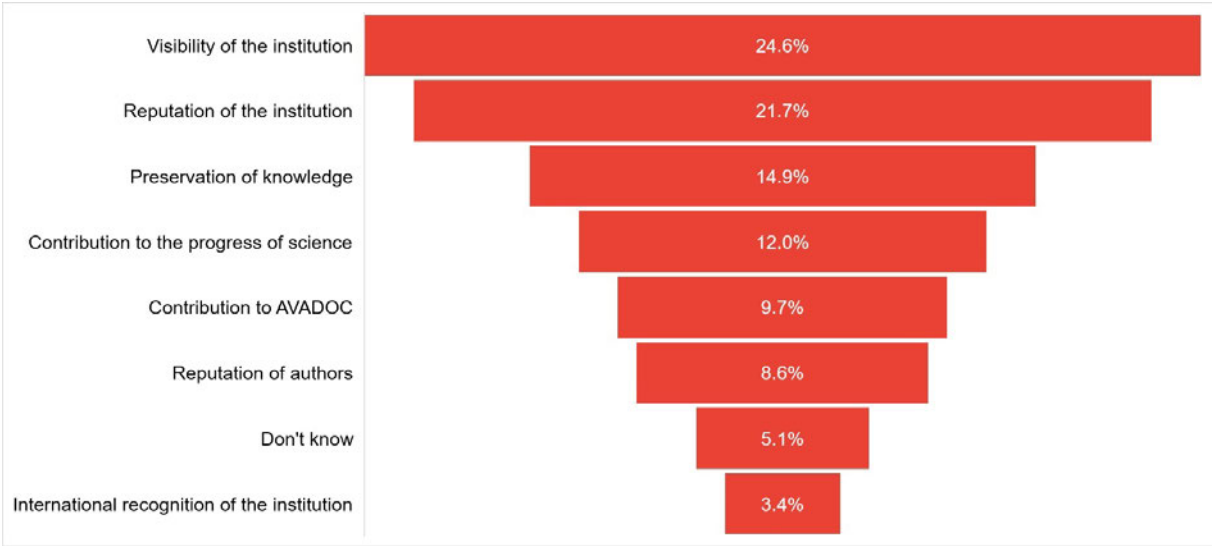

Figure 5. RCIPCB’s impacts – teachers'/researchers' point of view

The majority of respondents (Fig. 6) indicated that they were aware of the Mandatory Policy of the Repository (PDD) (68.7%) and the obligation to deposit documents resulting from their own scientific production (65.1%). However, 1/3 of the respondents indicated that they were not aware of these two aspects, which is considered to be a very high figure that requires the definition of corrective measures. Compared to previous studies [21], the lack of knowledge about PDD has increased, which may be related to the renewal of the teaching/research staff. Similar results were found by other authors in their studies [23].

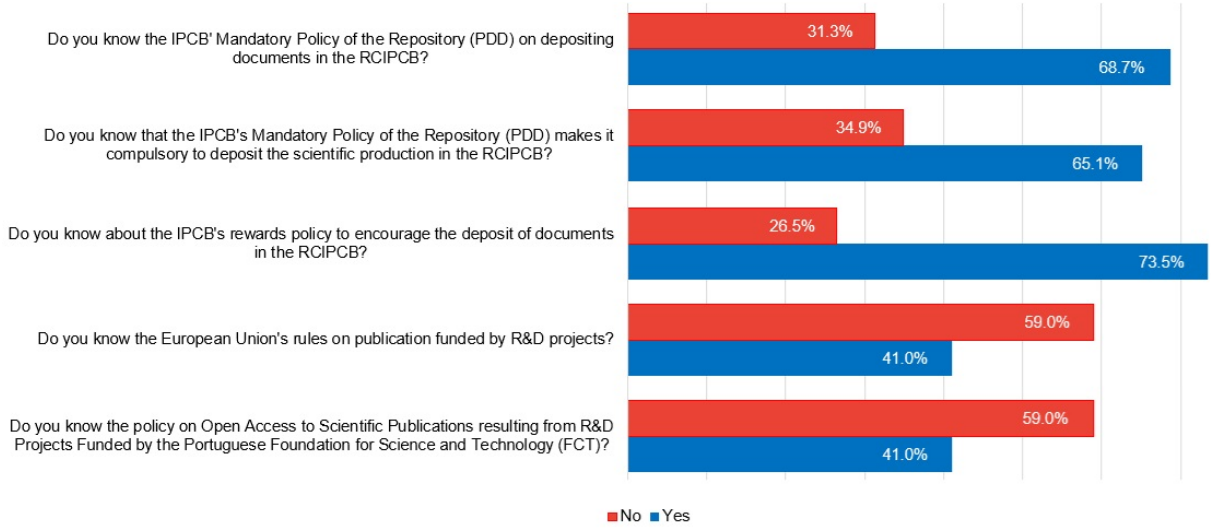

Figure 6. Knowledge about Mandatory Policy of the Repository

However, the improvements don't seem to be producing the expected results, with the exception of master's theses, which are deposited in the RCIPCB by libraries, in addition to the national legislation. In addition, 26.5% of respondents stated that they were not aware of the institutional reward policy that encourages teachers/researchers to archive documents at the RCIPCB. These orders have been included in the annual orders of the President of the IPCB since 2017. The percentage of unawareness rises to 59.0% in relation to the European Union rules on the open access deposit of documents produced as part of research supported by funded research projects. Also, 59.0% of respondents indicated that they were not aware of the Open Access policy of the Portuguese Foundation for Science and Technology (FCT) regarding research funded or co-funded by this agency.

4 CONCLUSIONS

The results obtained in this work show a certain stagnation/regression in some of the parameters analysed compared to previous studies related to RCIPCB. It is considered essential to improve the strategy for disseminating knowledge about the RCIPCB, the Open Access to scientific publication and the concept of Open Science and its potential. Although the vast majority of teachers/researchers indicated that the RCIPCB was 'essential' or 'very important' to the institution, it will be necessary to inform them of the potential contribution of the RCIPCB to enhancing their reputation as producers of scientific knowledge. The dissemination strategy should be based on a programme adapted to the institution's objectives, emphasising the central role of teachers/researchers and their contribution to the progress of science in an open-access model. It will be important to map and monitor compliance with the provisions of the PDD and to maintain and improve existing dissemination and motivational tools such as the RCIPCB Newsletter, Dispatches and Awards (annual).

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