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CHEMISTRY RESEARCH FUNDING SCENE IN PORTUGAL

OVERVIEW

The policy-making structure

Policy-making design in Portugal has been object of a concentration in the last decade with the coordination at policy-level under the remit of the Minister for Science, Innovation and Higher Education (MCIES). For policy formulation MCIES has the advisory support of the Higher Council for Research, Technology and Innovation (CSCTI), a body that expresses the opinion and strategies of the main actors of the system (public bodies and government laboratories, research institutes, universities and firms). The public policy when defined and approved at national policy level is coordinated with the Portuguese Community Framework Programme, a six-year programme contracted with the Regional Directorate of the European Communities for the process of catching-up of the Portuguese system with the European average.

Four main public agencies are implementing the research and innovation policies. The main funding agency for research is the Foundation for Science and Technology (FCT). The business-oriented research is managed by the Innovation Agency, a joint-venture between MCIES and the Ministry of Economy. On the other hand, the agro related research is managed by INIA a government laboratory which combines also funding functions. The fourth agency is GRICES for the international cooperation either European, bi-lateral or multilateral.

FCT is a public institute under the aegis of MCIES, whose mission is to promote and fostering research and excellence in Portugal, covering all scientific domains from natural sciences to humanities. FCT implements the funding programmes with the support of seven advisory councils composed by outstanding researchers. Traditionally the yearly calls for sponsoring training and research activity are done in responsive mode. Research projects are written in English and evaluated by international review panels. The research projects have a maximum duration of 3 year and the funding award is limited to 100,000 euros of funding. Research units and associate laboratories are sponsored through competitive calls (every three years) and are also evaluated by international reviewers. The budget of Portuguese Foundation for Science and Technology in 2004 was 229 million euros.

On the other hand, Innovation Agency since 2003 is managing programmes from different ministries whose aim is innovation and business research. Proposals are written in Portuguese and evaluated by national committees. They open yearly calls for sponsoring infrastructures, development of in-house research facilities in companies, fiscal incentives, cooperative research and innovative projects, and human resources. The integration and promotion of Portuguese firms in the international programmes is also managed by AdI.

Brief overview of Chemistry in Portugal

Portugal has a tradition in public research in chemistry, while industrial research remains very limited due to the nature and structure of chemistry-related companies in the country. Academic research in basic and applied chemistry represented in 2001 a volume of R&D expenditure in the order of 381 million euros which is equivalent to 54% of the total public research 708 million euros

in the field. Chemistry research centres are present in most of the universities in the country and in two government laboratories.

In the last three years FCT sponsored in average 50 new projects per year. The average funding awarded per project is 68 k€. Innovation Agency has sponsored 9 projects for cooperative research in the chemical sector in recent years.

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Funding figures

In the year 2002, FCT funding for chemistry research was about 14 million euros. 9.3 million euros was allocated for basic chemistry research, and 4.3 million euros for applied chemistry research. The total research funding of FCT was around 200 million euros in the year 2002. In 2004, 41% of the total budget of FCT came from EU (structural funds from DG region).

In 2001, FCT represented around 20% of the total public research budget in Portugal. In the year 2001, FCT funded 23% of the total Portuguese expenditures of the basic chemistry research and 36% of applied chemistry research (including chemical engineering).

Position, aims, strategies

FCT is the main research funding agency in Portugal. It is public institute under the aegis of the Ministry of Science, Innovation and Higher Education. FCT funds all disciplines without earmarked budgets for research fields. However, there are some thematic calls in the field of social sciences and humanities.

FCT's main strategy in chemistry research is to enhance the scientific quality of chemistry research to the European level and to promote cooperation between the main actors in the field. FCT focuses on the promotion of networks either within organisations or within research themes. The funded projects are mostly disciplinary. In chemistry, there is no tradition for promoting interdisciplinary approaches. The opportunity to co-operate with other chemistry research financiers has not yet arisen, but is a possibility.

The Portuguese science policy is traditionally centred on bottom-up approaches. However, there were periods where some top-down approaches were applied, namely in some of the structural programmes, which are partly financed by EU. Since Portugal decided very early in the nineties to concentrate most of the public funds for matching with the European regional funds for maximizing its benefit, the regulations defined at REGIO Directorate apply to a majority of the programmes managed by FCT.

Part of the funding for FCT comes from the Community Structural Programme for Portugal (2000-2006) and the rest from the national budget. The Portuguese six-year framework programme for science and technology is formulated and approved at national ministerial level and then negotiated with the European Commission for co-funding. The approved programme is thus a consensus between the national strategy and the European aims for enhancing the technology and scientific infrastructure of the less favoured regions.

The FCT has a set of Scientific Advisory Councils that participate in the formulation of the guidelines in interaction with the technical staff and the presidency of FCT for the design of new programmes. Researchers therefore can influence the funding strategies through its participation in the advisory structures

The FCT has traditionally involved in its strategic planning the main actors of the national innovation system, comprising scientific communities, firms, and other stakeholders as private foundations involved in scientific and technology support, however, their participation has not yet assumed a consolidate form.

The FCT budget and goals are negotiated every year with the ministry. FCT submits the annual planning and budgeting to the Ministry for approval. In addition, the main funding decisions are validated by the minister. In the preparation work, the FCT takes into account the government programme approved by the Parliament and advice of the Higher Advisory Council for Science and Technology and Innovation.

Decision making bodies

The Board of Directors decides on funding based on the recommendation of the peer review panel. The minister in charge of FCT, validates the decisions. The Board also can decide on strategic issues in consultation with Scientific Advisory Councils, however the plans must be submitted to the minister for approval. The Board consists of president and two vice presidents of FCT.

There are seven Advisory Scientific Councils formed based on different disciplines. Advisory Council members (researchers) are selected by the Board of Directors and approved by the Ministry of Science, Innovation and Higher Education. The size of the councils vary between 5 to 12 members.

If the funds come from the Community Framework Programme (Structural Funds) the manager and the management committee of the programme intervene in the funding decision. Their approval on the conformity of the project with the overall programme objectives is obligatory. The minister of Science, Innovation and Higher Education confirms the proposed decision.

Funding instruments

FCT funding is structured around following schemes: promotion of training and career development (fellowships, scholarships), promotion of the institutional base in higher education and private non-profit sector (institutional funding), support to infrastructures, promotion and development of scientific activity (research projects). The type of instruments mobilised within these schemes are fellowships and scholarships (MSc, PhD, post-doc, sabbatical leave, PhD in firms), centers of excellence support (associated laboratories), research centers, research projects, infrastructural support, and scientific culture. Fellowships and scholarships cover 36% of the total funding.

These schemes are co-funded by the Operational Programme for Science and Technology (POCTI) supported by EC regional funds (48.5%) and by the national budget (50%) and other sources. POCTI is a six-year programme 2000-2006 with an initial budget approved of 956,736,000 euros for all scientific and technology domains.

Funding principles and application processing

In the following description, focus is laid on the POCTI chemistry research projects. Concerning the call in 2001, the funded chemistry project size was around 68,000 euros for a three-year period. Following expenses can be funded: non-permanent salaries costs, travel, consultants, services and maintenance, consumables, overheads, equipment. Salaries of permanent staff cannot be funded. The overheads share is up to 20% of the total of the eligible expenditures funded. VAT cannot be paid, except for the organisations that cannot recover VAT. Funds can be used for other purposes than for those originally planned, but it does require negotiation.

The applicant should, in principle, hold a PhD degree. However, researchers having an outstanding scientific record without PhD degree can apply. Following organisations can be funded: higher education organisations, non-profit organisations, public research laboratories, and companies when in consortium with other research institutes. It is possible to grant funding to a foreigner working in Portugal. However, it is not allowed to fund a foreign institute or university, which cannot thus be a part of the project.

During the implementation of the project, if the principal investigator requests a change in the project's duration or level of funding through a well-argued proposal, FCT can consider to change the previous commitment after a positive evaluation of the initial reviewers of the proposals. It is more common to prolong the duration the project than increase the funding.

If a researcher or a team moves to another organisation within the country, the researcher can take the funding with him/her, if this is agreed by all parties. Normally researcher cannot take funding to another country.

The calls are open in principle each year. The duration of the call is fixed and is normally of two months. The time from application to decision varies from programme to programme. In principle, the decision should be made in six months but it can take longer.

There is a special application form and instructions for proposal preparation. The application forms are both in English and in Portuguese but the instructions for preparing the proposal are in Portuguese only. There is only an electronic service for submitting proposals, hardcopies are not accepted. If the set page limit is not respected, the information in excess is not considered in evaluation. The application should include the full proposal, application form, cvs, the term of responsibility signed by the proponent organisation and principal investigator. Selected scientific articles from the applicants can be added. Applications are required in English only.

Peer review

The proposals are peer reviewed by a review panel composed mainly of foreign experts. The panel is proposed by the Scientific Advisory Council to FCT Board that submits the list for approval to the Minister of Science, Innovation and Higher Education. If the panel members' own expertise does not cover all the proposals they can ask for reviews from outside experts.

Applicants cannot propose reviewers. Panel members and experts are selected on the basis of their international standing in the field. Most of the experts and panel members are international. Reviewers are paid a per diem allowance and a small amount per project evaluated.

The evaluation criteria are: 1) scientific merit and originality of the proposed activity, 2) scientific merit of the research team, its qualifications to conduct the project and its configuration regarding research opportunities provided to young scientists, 3) feasibility, work program and budget appropriateness. There is a specific evaluation form and the reviewers are provided evaluation guidelines. Both are in English.

Panel members and experts selected by the panel members receive the proposals electronically one month before the panel meeting. Panel members/experts prepare preliminary evaluations before the panel meeting. At least two panel members/experts read each proposal. The panel meets during one or two days in Portugal and the evaluation can involve discussion with the applicants. The panel is asked to present a detailed review for each proposal, budget recommendations and to propose a ranking list. The panel produces a final review of each proposal based on the discussion and preliminary reviews.

The amount of proposals processed in the panel and the number of panel members depends on the number of applications. In 2001 the number of applications received in chemistry was 110 and the panel was composed of 12 members. It means 18 proposals per panel member.

The final reviews are sent to the PI. If the Board of the applicant's institution ask for the review it is sent to them. The composition of the panel is known and publicly available, but not the evaluators for each proposal.

In the year 2004, the procedure that allows the applicant to improve the proposal before decision making is implemented. Applicants receive the results of the evaluation and the pre-decision on which they can comment or re-design the work programme and budget allocation.

Decision-making and follow-up

The decision making process is prepared by the FCT's department (service for programmes and projects) based on the review panel recommendations and the budgetary constraints. The Board of FCT then decides on the funding. The decision of the Board is validated by the minister responsible. If the project is co-funded by EU structural funds the approval of the management committee of the programme is required.

The approved budget for a project can be lower than the one required, depending on the panel's recommendations. If the budgets are cut there are negotiations with the applicant. The level of the cuts varies from project to project. Fellowships included in each project are restricted so that the budget for human resources cannot exceed 25% of the total budget. The recruitment of fellows must be preceded by public announcements and the selection must be carried out by a committee of at least three doctors.

In the year 2001, half of the chemistry proposals were funded, but usually this figure is around one third.

Scientific progress and financial matters of the projects are followed-up by mid-term reports and site-visits. If the funded project does not progress as planned it can be terminated or the PI may be advised to reformulate the project.

Each project has to submit final scientific and financial reports. There are report forms and instructions in Portuguese. The scientific final reports are in principle evaluated by an international panel or by the Scientific Advisory Council but not in a regular basis. The evaluations are sent to the PI.

The outputs of the past project are listed in the proposal and may be taken into consideration by the review panel that evaluates the proposal.

Legal and administrative considerations

Granting funding abroad. In the funding regulations it is stated that a foreigner can apply if he/she has a residence permit or is living in the country for more than a year. However, the regulations do not allow to grant funding to foreign institute or university.

Conflict of interest. There are national regulations regarding conflict of interest. The Administrative Code (Chapter 1, Art. 44 to 51) inhibits a person of taking part of the decision-making process when: 1) he/she has interests in the process, 2) someone from his/her family is involved, 3) he/she has taken part in the advisory phase. Conflicts of interest are also spelled out in the diploma that regulates the evaluation procedures. It inhibits a proponent to be part of the evaluation and selection panel (Despacho 20-A/MCT/96).

In the evaluation guide that is provided to reviewers, it is said: “An individual directly involved as a proponent, member or paid consultant of a research project may not participate in the evaluation of that research project. Besides, the research proposals submitted by members of a Research Unit whose leader belongs to the Evaluation Panel are not evaluated by that Panel and will be subjected to an alternative evaluation process, as well as other proposals that the Evaluation Panel thinks that it cannot evaluate without conflicts of interest.” This applies also to the FCT Board members.

In FCT, a person involved directly or indirectly with a proposal should not take part in the decision-making process. Experts and panel members sign a statement informing that (s)he does not have any conflict of interests regarding the proposals under evaluation and selection by him/her.

Publicity. There are no special regulations concerning publicity except that the beneficiaries of the public funding and the amount of funding have to be made publicly available. During the evaluation process the names of the applicants and titles of the proposals are publicly available. After the decision the abstract of the project is made publicly available.

The final reviews are sent to the PI. If the Board of the applicant’s institution ask for the review it is sent to them. The composition of the panel is known and publicly available during the evaluation process, but not the evaluators for each proposal.

According to FCT regulations the proposals are confidential. In the evaluation guide that is provided to reviewers, it is said: “The confidentiality of the written proposals must be protected. The evaluators are asked not to copy, quote, or otherwise use material from them. Upon completion of the evaluation they are expected to return their working copies of proposals to the FCT staff or to destroy them.”

Applicant should clearly indicate in the proposal which part of information is confidential.

Intellectual property rights. The inventor shares with his employer organisation the rights to the patents as well as the revenues in case of exploitation. The regulations on IPR are not spelled out by FCT but they depend on the rules of each organisation that receive funding.

Research ethics and good scientific practices. There are just general regulations concerning authorship best practices in Portugal. In FCT, national and European regulations concerning animal and human experiments must be followed.

Equality of genders and minorities. There is no positive differentiation according to the gender or minorities in Portugal or in FCT.

General. There are no regulations that would prevent FCT from participating in transnational calls.

Obstacles and best practices for transnational research programmes

FCT has experience with national joint programmes with public, and private organisations, as well as with international organisations (CERN and ESO in the pre-accession period). FCT has also participated in international joint programmes within CERC 3, EUROCORES/ESF, etc.

The main obstacles for jointly funded chemistry research programmes within European countries would be the convergence of national regulations and procedures since they are country specific. The main obstacles in FCT would be that the process should be reorganised for coping with other kind of procedures as well as lack of qualified human resources in terms of both quantity and quality. To overcome these obstacles the best practices should be shared between the organisations and the administrators should be trained.

In order to answer the question about best practices for transnational chemistry research programme all the different procedures should be known and benchmarked at first. At the time being we are not aware of what would be the best practices, or if a best practice in a country can be easily adopted in other countries. We do not know if the best practices would come out from the diversity of national practices or from the experience of European programmes. However, EU has been quite efficient in cooperative applied research projects.

Common pot programme allows a better coordination at project level. Jointly funded programme is more a sum of different sub-projects following different rules and procedures of each organisation. This can be quite difficult to manage if there is a central coordination at project level.

OTHER MAJOR FUNDING BODIES IN PORTUGAL

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AdI, the Portuguese Innovation Agency is managing programmes from different ministries whose aim is innovation and business research. Proposals are written in Portuguese and evaluated by national committees. They open yearly calls for sponsoring infrastructures, development of in-house research facilities in companies, fiscal incentives, cooperative research and innovative projects, and human resources. The integration and promotion of Portuguese firms in the international programmes is also managed by AdI.

AdI does not have a specific funding budget for chemistry.

Main characteristics of funding policy and procedures

AdI funds essentially applied research and the involvement of an industrial partner is mandatory being the promoter of the project. The drive of projects is bottom-up. AdI supports only coordinated projects and the participation of R&D institutes or university departments. Individual researchers may not apply for funding. Proposals have to be submitted in Portuguese and are evaluated by anonymous external experts. International referees are used only exceptionally in certain situations. AdI programmes are always open and project proposals may be submitted electronically. The average processing time between submission and decision of a proposal is 4 months. The success rate of project proposals is 27,3% and 10% by value.

Eligible costs involve salaries not related with public administration persons, consumables, scientific equipment, IPR costs, consultancy costs, scholarship grants, bibliography up to 2% of eligible costs, voyages directly related with the project and overheads up to 20% of eligible costs.

Project outcome is assessed by technical/scientific and financial reports sent all 6 months.

AdI programmes are directed towards national entities only but the agency is very much interested in knowing more about participating in transnational research funding. Also AdI is participating in the EraSME project that will evaluate possibilities of transnational funding regarding SME's.