

National Research Funders' Collaboration - Strengthening the Regional Research Landscape

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Abstract. *Research funding is a process based on thorough and rigorous research evaluation performed by international experts, organised and managed by the independent national research funding organisations. In the European Union, the majority of research funds still originate from the budgets of the Member Countries. It is nearly a decade since the national research funders started to cooperate, aiming to improve their expertise, encourage the cooperation of scientists and make the research potentials ready to compete in the demanding calls within European research framework programmes, with special attention on prestigious projects of the European Research Council. In this paper self-organisation of research funders is shown at the European, global and regional levels, stressing the goals, instruments and challenges of the latest. The comparable evaluation system, independence of the funders and sound handling of the possible conflicts of interests is the prerequisite for the cooperation of research funders at any level. A case of CEUS (Central European Union of Science funders) is used in the discussion.*

Keywords. research funding, evaluation expert system, management of regional cooperation, research landscape

1 Introduction

Research funding at the national level is of the utmost importance to assure the needed scientific potentials for international cooperation, competitiveness, and to provide the scientific advice for decision-makers at all levels. The scientific fields to be covered are usually stated by the national policy documents, although, regardless on the size of the country, most of them are struggling to cover the majority of the scientific fields and the consecutive specific areas (the accurate classification of scientific fields used by research funders is the FORD (Fields of Research and Development), published by *The Organisation for Economic Co-operation and Development* (OECD,

2015, page 59). Variations of funding coverage for scientific fields and areas are often in place due to a legacy, or other reasons, as discussed later in this paper. The concept of independence/autonomy and the cooperation of research funding organisations is stressed in this paper. The role of the Science Europe Organisation is introduced for the purpose of setting the scene for the regional cooperation. Evaluation systems in most countries differ in details; however, the basic structure of the widely used system comprehending internationally renewed independent experts and panellists makes the approaches comparable, offering a corresponding platform for cooperation, both on bilateral and multilateral levels.

In society there is no doubt of the importance of scientific progress at the declarative level. The awareness is related mostly to the new knowledge leading to new products and new jobs, which brings us to the conventional cyclic thinking supporting research. Long-term, the state provided funding of science is the overall accepted way of institutionalisation of the care for science, in the long term aimed to originate benefit for the economy and society at large. The importance of basic research is not always well accepted, and, learning from the economic crisis a decade ago, often not treated as a sustainable way of growth and prosperity in the future. The work of Venavier Bush, the Director of the Office of Scientific Research and Development in the USA, and published by the National Science Foundation (Bush, 1945) was crucial for the recognition of the integrative approach to science and the public welfare worldwide, and even nowadays this publication is still used as a textbook by scholars. Indeed, it is supposed to be consulted by policy makers. Ziman's (Ziman, 2000) discussion on pure science can also serve as introductory reading, including the clarifications on academic science, and of the science base and observations of its impact, and leads us eloquently to the background of the national funding, regardless of the present economic welfare: "Although academic science requires a very sophisticated social environment, it is cultivated variously in tiny plots in the poorest and least developed countries." (Pages 24-25)

In this paper, those research funding organisations are mentioned that address predominantly the basic research and the applied research, with no direct industrial application. They are funders of the new knowledge and talents. Using the language of the NASA Technology Readiness Levels (TRL), also adopted by the European Commission in 2014 research framework programme (EU Horizon 2020, 2014), the research funding observed in this paper is involved in sustainable supports to TRL's form one to three, (basic principles observed, technology concept formulated, experimental proof of concept).

2 The Structure and Prerequisites for Research Funding Organisations

In the last two decades, different types of Associations and Organisations aimed to bind the national research funding systems, struggling for both administrative cooperation and mutuality in experience exchange for the complex, at domestic level often criticised evaluation processes. Mentioning just two of them – in many ways predecessors of Science Europe, an active association of research performing and research funding organisations – gives us an insight to the collective effort of National Agencies/Organisations for improvement, and to boost the excellence of researchers through evaluation and funding mechanisms: EUROHORCS (European Heads of Research Councils) and ESF (European Science Foundation). Almost a decade ago tough discussions and opposite views (illustrative article: Sattary, 2011) were confronted by national funders, and the new association, called Science Europe, was formed in 2011 after the rejected merger of EUROHORCS and ESF.

2.1 Science Europe - The Association of National Organisations

Science Europe is the European Association representing the interests of major public research performing and research funding organisations. The association was founded on 21 October, 2011, and is established as an International Non-profit Organisation under Belgian law, with its office in Brussels. The Slovenian Research Agency (ARRS) was a founding member.

The vision of this Association is to contribute to a strong European research ecosystem that, in turn, will help create better science. The Association acts as a forum, where its Member Organisations join forces and collaborate to shape the future of research in Europe in a way that no single organisation would be able to achieve on their own. This declarative description of the vision (Science Europe, 2013) is illustrated by two overarching missions, the *Active Advocacy* (to be a

recognised and respected voice in the European Research Area, alongside national governments and the European Commission, and contribute to improving the political, legislative, and financial conditions of scientific research in Europe), and *Collaboration* (to promote exchange and cooperation between our Member Organisations in terms of both policy and activities, with the aim of improving performance and the impact of Science Europe and its Member Organisations nationally and at the European level). In the last few years, the focus was moved from scientific advice, being in the forefront of the mission (Science Europe, 2013), and organised in the complex structure of Scientific Advisory Committees (SACs). Advice from active researchers is still an essential input to sound policy making. Today, the Association engages directly with the scientific experts and researchers, who advise and lead its Member Organisations, and continues to gather independent opinions and advice adapted to the diversity of its activities (Science Europe, 2020a). For illustration, Science Europe has also been instrumental in developing and promoting Plan S, an international and inter-institutional effort to make full and immediate open access to scientific publications and research data a reality. Many of the Science Europe member organisations are funders and/or members of cOAlition S, so they have endorsed Plan S and are jointly working on its implementation (cOAlition S, 2020), which is of the utmost importance, since the majority of audacious national strategies on open access have a lack of implementation-level insight. Today, cOAlition S is recognised globally and is a highly influential Association of public and private research funders embracing implementation models for open access that would change the existing often rigid business models for scientific publications, such as Article Processing Charges (Eve, 2007). Launching guidelines, requirements for price transparency frameworks and exploring non-commercial publishing models for open science, raise the international position and visibility of cOAlition S.

2.2 National Research Funding Organisations

National Research Funding Organisations commonly have their legal background in statutory and implementing Acts. In the case of the Republic of Slovenia, it is the Act on Research and Development adopted by the National Assembly and the governmental Decision on establishing the Public Research Agency of the Republic of Slovenia. In general, the research funding organisations, as stated by their European Association (Science Europe, 2020a), Science Europe member organisations should:

- (a) Have a substantial and significant impact on their national research system and budget,
- (b) Be funded primarily through national public funding,

- (c) Have substantial operating independence from their national government.

Each of the listed attributes can be analysed and discussed further in relation to the specific legal and governing structures, notwithstanding that the concept of substantial operating independence from the national government is discussed and mostly (mis)understood. Being funded from the national budget, the National Research Funding Organisations are, at the same time, obliged to maintain their operating independence through impartiality of the research proposal evaluation, transparency of procedures and decisions based on these evaluations, appropriate addressing of conflict of interest of all involved experts, and their need to display efficiency, meaning the appropriate speed of operating procedures.

The operating structure of research funders is anticipated as predictable in all countries, and involves three parallel structures, each performing its powers and competences: (a) The administration, full time highly skilled administrators chaired by a Director, President, or wider leadership structure, (b) The Scientific Council, in its structure assembling the highest-level scientist covering all fields of sciences and the funding mechanisms of the Institution; their responsibility is to advise, conceptualise and to act as decision-makers at different levels of research assessment processes not being directly involved in evaluations (may vary), and (c) The governing/managerial body, deciding on the operational activities of the Institution and having the power of nominating the Chair of the Institution, to be appointed by the national government or other highest-level National Institution.

The importance of National Research Funders, the waste amount of annual funds from national budget and their importance for the research community, can be illustrated well by the quote from Science Europe (Science Europe, 2020a), stating that »36 member organisations from 27 European countries are highly recognised nationally and internationally. Together, they contribute approx. €18 billion to research per year. They joined forces in Science Europe to support the best conditions for research. «

3 Regional Alliances – Active Cooperation for Bridging the Gaps

The variety for the need for regional Associations spans from learning societies to the funders. All these subjects have joined interests, and have the power that contributes to the widening of the expertise and increased visibility in the research community. Research funders have similar challenges in the unbalanced European research landscape of 28 (27) countries with very different attributes regarding economic development, scientific culture and tradition.

“Widening participation” is used to describe the need for a more balanced contribution of scientists in European research projects, both in the application and success. Indeed, the expression might be treated as a euphemism, since its message is clear: Get the involvement of those Member Countries whose performance and investment in research is below average, and they are faced with extensive brain drain instead of brain circulation. With outstanding attention, the topic of widening was addressed by the European Research Council (ERC) by the Chair of the ERC Scientific Council Working Group on Widening European Participation, Eva Kondorosi (Kondorosi, 2015). The effort of ERC led to the establishment of a “visiting Fellowship” scheme for researchers from weak participating regions to organise visits to ERC teams for a short period of time, aiming at supporting them strengthening their research ideas before applying to the ERC. The scheme was also introduced by ARRS, evidently contributing to the improved performance of researchers from Slovenia (ARRS, 2019).

3.1 The CEUS initiative - Central European Science Partnership

In 2018 a Letter of Intent was signed by CEUS (Central European Science Partnership) in which members/partners agreed to develop jointly concrete measures to stimulate and support the further cooperation and integration of research activities among the partner countries: “To do so, the partners agree to organise meetings of both the Heads of Research Councils (HORCs), as well as of office staff members, to develop and advance joint research activities among the partners.” At the time of signing the Letter of Intent, possible foreseen actions included the “exchange of information on current developments in the respective national research systems, the discussion of science policy issues that are of common interest, the exchange of best practices, as well as the joint development of specific funding instruments to promote the scientific cooperation and integration among the partner countries.”

The Memorandum stated the basic principle, that all actions within the partnership will be “taken on the basis of mutual consent, aiming to maximise the benefit of the co-operation for the individual partners, as well as for the scientific communities within the partner countries.”

The CEUS Memorandum (CEUS, 2019), signed in Vienna in 2019 right after positioning of operative and administrative details, was much more than just an Act protocol of the Chairs of the research funders involved. Four partners agreed on high level mutuality and trust with the use of a unilateral evaluation procedure for bi- or multilateral research projects among partners: “The results of the evaluation procedure shall, subsequently, be accepted by the respective other partner

organisations, presupposed that the decision body of the partner organisation approves of the result.” In ten points the memorandum offers an operative-level platform acceptable for all partners not to interfere with different national legal and other related bases (CEUS, 2019):

(1) The joint project application is submitted to one of the partners, which, as a consequence, acts as the Lead Agency. The partners agree on the principle that a partner acts as the Lead Agency for a Joint Research Project only if a substantial financial contribution to the Project is requested from this partner by the applicants. Further details will be specified separately by the partners in mutually agreed guidelines. The application must follow the application guidelines of the Lead Agency;

(2) The application consists of a joint scientific description of the project, delineating the scientific contributions of the respective partners. Cost calculations must be stated separately for each national part of the project, and must follow the guidelines of the respective National Funding Agency;

(3) Once the application is submitted, the Lead Agency informs the partner organisation of the application, and asks for a formal check of the respective national project part. If the formal criteria of one of the funding agencies are not met, the application is considered as being rejected by all funding agencies involved;

(4) The Lead Agency administers the evaluation process in accordance with its standard procedures that apply for the respective funding programme. The partner agencies agree on an international peer review procedure;

(5) The Lead Agency forwards the result of the review process to the partner organisation(s) (funding/rejection), including complete reviews and/or any other documents and information relevant to decision-making. The partner organisation(s) assure(s) the confidential treatment of this information;

(6) The partner organisation(s) present(s) the result of the review process to its decision body, and asks for the confirmation of the Lead Agency’s decision. Should the decision of the Lead Agency not be followed, an explanation for this must be provided to the Lead Agency;

(7) If no agreement can be reached between the partner organisations, the application is considered as being rejected;

(8) After a decision has been reached, the involved agencies inform the applicants of the outcome;

(9) In the case of approval, project parts will be financed by the respective funding agency in accordance with its standard practices;

(10) Intermediary and final reports will be carried out in accordance with national guidelines.”

3.2 CEUS Partners Profile

Regional partnerships are aimed to provide a joined platform for successful cooperation, (mostly) neighbouring countries, and to leverage the differences in size, performance and research potentials of research funders from these countries. Let us mention the well-established Nordic partnership, that works at different areas (e. g. Nordic EMBL Partnership for Molecular Medicine), the D-A-CH collaboration, the well-established lead – agency type of cross-border cooperation in the field of (also) German speaking countries (Germany, Austria, Switzerland), nonetheless, also the European Commission supported regional research infrastructure consortia like the CERIC (Central European Research Infrastructure Consortium).

The profile of CEUS partners is built by the research funding organisations from countries: Austria, the Czech Republic, Poland and Slovenia. In the preparation the Hungarian partner was involved, but due to the statutory changes and organisational positioning of that Institution, it is not involved in the membership yet. Research funders from Croatia and Switzerland also expressed an interest to participate; thus, we might experience widening of the partnership in the coming years.

CEUS partners are listed below, and the hyperlink to their latest Annual Reports for 2018 are given in the footnote. However, with differences in format and editorial approach, the Annual Reports of research funders are the most relevant and comparable documents, displaying the mechanisms, instruments and funding methods:

Austria (Austrian Science Fund (Fonds zur Förderung der wissenschaftlichen Forschung, FWF));

Czech Republic (Czech Science Foundation (Grantová Agentura České Republiky, GA ČR));

Poland (National Science Centre of Poland (Narodowe Centrum Nauki, NCN));

Slovenia (Slovenian Research Agency (Javna agencija za raziskovalno dejavnost; ARRS)).¹

In 2019 the listed research funding organisations started their activities in the form of a *bilateral and/or multilateral Lead Agency* manner. (Zubascu, 2020)

¹ Hyperlinks to on annual reports (2018) of research funding organisations:

FWF (Austria): <https://www.fwf.ac.at/>

GA ČR (Czech Republic): <https://ga-cr.cz/en/types-of-grant-projects/>

NCN (Poland): <http://www.ncn.gov.pl/finansowanie-nauki/konkursy/typy?language=en>

ARRS (Slovenia): <https://www.arrs.si/en/obvestila/19/objava-letno-porocilo-18.asp>

4 Evaluation

Evaluation of the project proposals is undoubtedly the main requisite for research funders, to build such a priority list of project proposals that demonstrate *excellence* (assessment is performed by targeted international experts, and they are selected according to documented criteria of their research funders, set predominantly by Scientific Councils; the experts follow the procedures, and must avoid bias and manage conflicts of interest; *impartiality* (proposals submitted must be treated equally, in a single blind procedure they are evaluated on their sole merits, irrespective of their origin or the identity of the applicants); *transparency* (decisions are based on clearly described rules and procedures that are published prior to the start of the process; applicants have access to adequate feedback on the outcome of the evaluation of their proposal), *appropriateness for purpose* - the evaluation processes are appropriate to the nature of the call and the research area. The evaluation process is in proportion to the investment and complexity of the work, and, *efficiency and speed* - (the evaluation process is as rapid as possible from start to finish, while maintaining the quality of the evaluation and respecting any legal framework).

Due to the imbalance and different treatment of prestige, widening of the EU and competitiveness too often measured through performances on European projects, the number of proposals and eligibility criteria becomes increasingly important.

One of the key messages of the Horizon 2020 Interim Evaluation Report (Horizon 2020, 20) says: "The large number of European research and innovation funding instruments is difficult to understand for potential applicants, and may lead to overlaps." Regional partnerships could at least partially answer this dilemma with a contribution to the distribution of target calls, and build long-lasting excellency and mutual interest research groups.

Bases of initiatives, like the already more than ten years effectual DORA (San Francisco Declaration on Research Assessment), nowadays, one of the main discussions on evaluation processes is related to the fairness and accuracy, that should not be over-reliant on publication metrics. New impact indicators are under development for the measuring success with, e. g., excluding cash incentives for publishing papers (Watson, 2020).

In July 2020 Science Europe published the Position Statement and Recommendations on Research Assessment Processes (Science Europe, 2020), empowering the research community with content in three chapters reflecting the evaluation criteria already listed above in this chapter:

- (1) Approaches used to assess and select proposals and researchers
- (2) Transparency of research assessment processes
- (3) Discrimination, bias, and unfair treatment in research assessment practices. An important

observation from the survey as a part of the of the position statement is related to the reviewers, the pivotal element on which the expert system of research funders could fall, or at least be exposed to the critical public responses: "Reviewers are generally selected based on their knowledge of the research discipline relevant to the assessment. The potential reviewer pool is reduced further by subject-specificity, multi-/inter-/trans-disciplinarily, required level of seniority (Full Professors are often required), and submission language." Furthermore, the expectations of/on researchers include peer review of publications, editorial positions, and mentoring. "This challenge is further exacerbated by a concentration of such reviewing requests targeting the most high-profile research nations and institutions."

Research funders often discuss the *reviewer challenge*. Availability of high ranking and simultaneously on-topic reviewers is rarely influenced by reimbursement of cost and scope of payment (or non-payment at all to the reviewer). Empirical evidence shows that availability is the key decision element in acceptance of the duty of reviewer.

5 Conclusion

National Research Funding Organisations have a crucial role in predictable funding of research. Their cooperation endeavour stands for continuous and internationally comparable improvements of evaluation processes, contributing to trust in the domestic research landscape, and to mutuality with other national funders, resulting in truly international research, and widening the participation and success in transnational projects and schemes.

Observations and discussions on selected cooperation schemas of national research funders joined in Science Europe demonstrate a remarkable opportunity in categories as follows:

Learning: The continuous learning for research funding organisations is a prerequisite of improvements of mechanisms and instruments; the long-term processes are not easy to change, or even modify, and when possible, must be followed by public consultations with the research community, though the new principles must be built on the continuous learning of the experts and administration, and even of the research-policy decision-makers. All this needs to be carried out in parallel with ongoing planning, evaluation and all the formal follow-up processes.

Trust: Research Funding Institutions have a certain trust at national level due, to their statutory position given by the legal background. The independence in performing the evaluations is an unavoidable prerequisite for trust at national level and in international cooperation. Government should manoeuvre transparently and in dialogue with the research community in applying their given power

(in)directly evident in nominating Chairs, Members of the Research Councils or the governing Board.

Ability to respond: Lessons learned from COVID-19 demonstrate the need for more flexibility by Research Funding Organisations. Annual and multiannual work programmes are, however, inevitable, and incorporated in the legal base of these organisations among those with the foundation-like structure and have more flexibility according to those tied directly to the national budgets.

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