

OECD Conference Report: “Science Funding in Transition – Changing Paradigms and First Experiences of Implementation”, held at the Wissenschaftszentrum für Sozialforschung

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The conference, chaired by Steve Shugar from the Natural Sciences and Engineering Research Council in Canada, was part of an OECD project entitled “Steering and funding of research institutions”. It intended to take a closer look at policy issues related to the governance of science systems by analysing and comparing how individual countries approach the different problems raised by a shift to the “knowledge society”.

There were three sessions held at the conference each treating another question: After the key note speech by Professor Braun from the University of Lausanne on the “antinomy of funding policies” the first session dealt with the question why priorities are set at all, who sets them and what techniques are used to select them? Professor van der Meulen of the University of Twente in the Netherlands gave a general overview of the literature in asking how much steering do we need and Mrs. Charette from the Canadian Foundation for Innovation in Canada presented the rationale and organisation of her Foundation in the Canadian context. The second session wanted to know more in particular about the funding mechanisms set up to realise priorities. Is there an appropriate balance between different funding mechanisms and is competition always the best way to ensure the use of limited resources? Several administrators from different countries presented “best practices” of their country in this respect (Mr. Broersen from the Ministry of Economic Affairs in the Netherlands about the Leading Technological Institutes; Mr. Seppälä from the Science and Technology Policy Council in Finland about innovation initiatives; Mrs. Köster from the Helmholtz Association of Research Centres in Germany about the reorganisation of funding of Big Science Institutes; Mrs. Sarah from the Australian Research Council about recent initiatives in funding policies). The third session, finally, treated matters of evaluation and controlling in order to know how one could measure the effectiveness of different priority setting and funding approaches and what kind of assessment criteria could be established? Professor Kuhlmann from the Fraunhofer Institute for Systems and Innovation Research in Germany presented latest developments in strategic evaluation while Mr. Speed from the Office for Science and Technology in the United Kingdom reported on recent changes in priority setting and evaluation.

Three more general remarks can be made in the beginning:

(1) It became clear during the discussions that one should distinguish between more philosophical and more pragmatic and technocratic questions concerning steering, priority-setting and funding. Questions like how much competition do we need, what should be the balance between programme and basic funding or how much interdisciplinary research should we aspire for, depend very much on the context they are asked in and refer to cultural beliefs, policy traditions and party political aspirations. Choices must be made but one should be cautious in giving absolute answers to these questions. The conference focused therefore much more on technical questions, i.e. how can we best inject a higher dose of competition into the research system or how can the efficiency of funding mechanisms be raised? Most contributors were not interested in discussing if the road to more market and competition should be followed but how to do it in the best way so that high quality research and social responsibility research can be combined.

(2) The second remark concerns the status of “best practices”. Though the identification of best practices is the central objective of the OECD, the few examples presented at the conference and the lack of clear criteria for judging what does “best” mean, make it reasonable not to strive for the identification of best practices in such a conference but to identify by discussion common concerns in funding policies (as for example the concern of an acceptable balance between short term and longer term funding) and to give each participant the opportunity to learn from the examples and discussions he or she has heard and to “re-contextualise” instruments and solutions in other countries according to the specificities of his or her own country.

(3) There was a general feeling – and this was worked out by professor van der Meulen – that pretensions in steering should be reduced in a sensible way. The rising complexity of research systems, growing interconnectiveness and indeterminacy have led policy-makers more and more to reduce their ambitions in direct regulation of research and to rather lean on structural and indirect policies to raise capabilities of research organisations and researchers to act and learn in a responsible and accountable way.

Without any doubt, one can state a number of *converging trends* in funding policies today that have in part already be highlighted by the OECD publication of 1991 on priority-setting. Among them we find:

- All countries have embarked on *strategic thinking* in the development of their funding policies. Strategic thinking does not just mean identifying the most efficient goal and means relationships but to develop policies considering the systemic context of research policies. A large number of variables must therefore be taken into account. A fine example for this tendency was given by Stephen Speed by presenting the recently set up joint venture of research councils and the Office of Science and Technology in the United Kingdom.

- The development of *strategic priorities* confirm these tendencies. Strategic priorities are often developed on several levels of the funding system and must be co-ordinated. Questions are still open how to find the right set of priorities, if they should be found by copying other examples or by being innovative and get an advance in development, and how to do it in the best way.

- *Competition* is the catchword everywhere. There is a strong belief in all countries that only by obliging research organisations (including universities) to compete for funds, there will be the rise of efficient and responsible research. The immediate consequence is a severe reduction in institutional funding and an augmentation of programme and project funding in research systems. By allocating funds in a competitive way, co-operative projects across the borders of science and industry can be effectively initiated.

- Governments have started or already realised a *considerable flexibilisation of organisational and funding structures inspired by the new public management philosophy*. This had considerable consequences for funding agencies, not only because they must more and more allocate program-bound funding money but also because of a the shift from input to output orientation: no funding agency can escape today the work of clearly identifying its objectives, demonstrate how these objectives should be achieved and measuring ex post how successful programs have been. This needed a major reorientation in mentalities and organisational behaviour.

- *Evaluation* has therefore become a key business of funding agencies and research institutions. As professor Kuhlmann indicated, there are different ways how to do evaluation

in a complex world. Evaluation tends to become – like strategic thinking – more and more sensible for the systemic context and must reorganise its procedures in this way.

Let us quickly reconsider the main conference questions:

(1) Why should we use priorities at all? In his conference paper, Steve Shugar had already developed possible answers to this question. During the conference two answers were discussed: one, there is a clear necessity to develop priorities because resources for research have become scarce and, two, we should use priorities, because they are the “key to success”. There are indications that by establishing priorities, funding agencies can quite effectively direct research trends and even reform research behaviour. Priorities oblige, both the funder and the funded and thus create stable working relationships as well as a stronger commitment of the scientific community in the development of proactive and strategic thinking.

(2) Who should set priorities? Of course, there is no clear-cut answer to this question. It is confirmed during the discussions that the OECD was right in 1991 to contend that priority-setting is a highly interactive process with many actors involved and that it is quite difficult and perhaps impossible to decide who has set priorities. It was mentioned that a clear-cut answer can also not be given because answers might depend on the themes aborded or structures available in a country. One sees, of course, a general tendency of governments to limit their priority-setting activities to the stipulation of the very broad and general lines of research policy. The recent announcement of “global steering” of the German Ministry of Education and Research might serve as an example. The presentation of the Leading Technological Institutes in the Netherlands has served during the conference to confirm the high and complex interaction process in building priorities.

(3) How should we set priorities? Again, there is no definitive answer but a consensus that priorities could and should not be set by Ministries in a top down fashion. The Dutch “polder model” is an example where – quite on the contrary – a large number of actors are participating and where several intermediary organisations are involved in order to aggregate bottom-up propositions and discuss them with the responsible Ministries. There are other ways, notably the Austrian one where recently an Advisory Council to the government has been made responsible for priority-setting and execution of research policies and which works more in a top-down fashion. There are different methods to gather the necessary information for priority-setting, for example Delphi-methods, an interactive deliberation process between all actors involved (from industry to scientists and politicians) like in the Netherlands, or the “systemic analyses” implemented by the Science Council in Germany. Conference participants were not sure to what extent stakeholders from society should be integrated in priority-setting. A general tendency to go into this direction is observable but the institutionalisation of stakeholders differs considerably in countries.

The new strategic thinking, “Mode-2”-funding and an increasing demand for applied-oriented research has had important consequences for the organisation of research councils and funding agencies respectively as well as on the allocation of funding money. The examples given during the conference demonstrate that all governments have attempted to reorganise the research council system though one should make a distinction between more independent funding agencies like the German Science Foundation and the research council systems. Governments have followed three strategies to reform funding agencies and overcome resistance: They have, first, circumvented the existing system by creating new agencies like it happened in Canada (an option critically regarded by some participants because this increases the institutional complexity of the system), they have, second, put financial pressure on existing funding agencies accompanied by a profound evaluation like in Germany, or they

have, third, completely rebuilt existing funding agencies like the ARC in Australia in order to integrate social responsibility and strategic thinking (which might be difficult because of the change in organisational culture). All three examples given seem to have led nevertheless to a satisfactory change in this respect and participants insisted on recommending that governments should continue to overcome the resistance of funding agencies in order to create viable and flexible funding systems.

Participants were quite aware of the difficulties these changes cause for the role of funding agencies in the research system. Traditionally, funding agencies are the intermediaries between two systems and feel the pressure of both. They maintain their balance by not giving in too much to either side. The recent reforms clearly strengthen the interests of societal and economic stakeholders in funding policies, often at the detriment of science interests. This was clearly pronounced by the Australian representative when stating that it becomes almost impossible to get the support of the government for long-term research projects. The healthy antagonism guiding the action of funding agencies may, therefore become destabilised.

We find, nevertheless, support in most of the OECD countries, especially from the side of industry, for maintaining long-term research. This might and already begins to change somewhat the mood of governments in curtailing funding resources for basic and long-term research.

There was some discussion on the thesis that countries needed to inject large amounts of money in order to reform their research council system and to be successful in research. Recent examples are Australia, Finland and Canada. Fresh and abundant money give the opportunity to create new institutions and overcome the gloomy mood of reforms imposed by austerity measures. This inspires funding actors to more actively pursue new funding policies. New money makes it also easier to overcome resistance of existing institutions insofar no redistribution of money is needed. It is nevertheless important that governments accompany their injection of money into the system by a clear vision and strategic goals of funding intentions.

Critical voices stated that change might also be possible without a growth of funding. Less money provokes more uncertainty and makes people work harder. The redistribution of money from responsive mode to program funding is also an effective way of reorientation in funding policies.

Finally, the conference embarked on the subject of how best to organise and fund co-operative relationships between universities and public-funded research institutes on the one hand and industry on the other. The example of the Leading Technological Institutes in the Netherlands served as an example. Several problems were raised in this context. A first problem is the question who should initiate such co-operation networks. If it is the government, the program might induce windfall profits for enterprises riding along the programme though they would have started it alone. Programs should therefore be pre-competitive but it is evident that it is difficult to determine when a research is pre-competitive or already competitive given the shorter cycles between new basic knowledge and application. A second subject are priority rights: in order to get enterprises in, property rights should be given to participant enterprises while public funding implies that knowledge is a public good. There were discussions about who best selects the topics of funding. The Netherlands pursue a strategy of outsourcing a preliminary study of the field and then get relevant enterprises, universities, research institutions and funders around a table to discuss the priorities which should be given. After the final tender an independent commission is deciding on which of the final subjects should be presented to the Minister and then to the Parliament. Monitoring and evaluation are other

subjects of interest. There are no best practices yet but it would be worthwhile to ask for further comparative studies in this respect.

Though the spectrum of topics discussed was broad, a number of questions remain to be discussed in the future which are presented below without pretending that one is more important than the other:

- What should be the future role of stakeholders in priority-setting and evaluation?
- To strengthen the learning capacities of funding agencies and research institutions is a major aim to adapt to a complex and ever changing world. How can this be improved? The evaluation procedure presented by professor Kuhlmann was one interesting example to do it. Are there others?
- Interdisciplinary research was not sufficiently aborded in discussions and must be more extensively discussed.
- Funding and research systems are globalising. This aspect of international competition between funding agencies, the role of the European Union and international networks of scientists must be integrated in reflections. While there is a competition for best researchers, increasingly a co-operation between funding agencies is also needed to improve best practices and efficiency.
- There are a lot of discussions on evaluation but the development of performance indicators can be improved.
- Evidently, research and technology policies are shifting together but there is still no reflection how in the future funding agencies and Ministries in these two fields of action can effectively collaborate.