

Executive summary of the final evaluation report on the III PRC Research Centres Programme

1. General Considerations

The third Research Plan for Catalonia (III PRC) has represented a very significant increase in investment in research in Catalonia. The overall funding allocated under III PRC has doubled compared to II PRC (from €137.96 M to €268.76 M) as has that for the III PRC Research Centres Programme compared to II PRC (from €35.16 M to €70.08 M). The importance of the Programme is established both in relative and absolute terms in the overall Plan. Even so, it is necessary to consider that the budgetary analysis of the Research Centres Programme could be distorted if it is taken into account that III PRC has led to the creation a significant number of new centres, some with their own building, which has required special-purpose investment and outfitting.

The overall Programme result is positive, since new centres have been created and others have been consolidated. The centres also agree on the positive effects of the Programme and this was reflected in their responses to a brief questionnaire. Even so, resources will have to be increased, their management made more transparent and objectives clearly defined for both specific centres and the whole Programme. Moreover, it will be necessary to clarify a future policy for reference centres, since the economic contributions of III PRC are almost the same as those of II PRC.

It can be said that in all knowledge areas economic contributions have increased, whether through an increase in the number of centres or through special-purpose contributions for installations. However, this growth in funding has not been uniform in all fields. The funding policies to strengthen certain areas have not changed greatly, with the exception of the Sciences, which was second in terms of economic contributions (behind the Life Sciences field), partly due to special-purpose investments.

The assessment process for the III PRC Research Centres Programme has involved a certain mixing of the assessment of the Programme itself with what could have been a direct evaluation of the centres. This assessment has only involved the study of centres that have received contributions from the former Ministry of Universities, Research and the Information Society (DURSI) under the Research Centres Programme, which has meant that other centres of outstanding importance in R&D in Catalonia have not been included in this evaluation.

The assessment process also revealed the urgency of establishing specific objectives for the Research Centres Programme and of establishing priorities in each field. Adopting the objectives of III RPC as the objectives of the Research Centres Programme also continues to be a distorting factor in the evaluation.

Some of the proposals for improvement and conclusions presented in this report were already put forward in the evaluation report for the Research Centres Programme of II PRC of January 2003 and in the follow-up report for III PRC of October 2003. These are examples of the lack of definition of the different typologies of centres, the lack of standardization of performance indicators in each type of centre or the renovation of grants and/or programme contracts on the basis of the conclusions of the evaluation reports.

2. Degree of achievement of the general objectives of III PRC

Due to the lack of specific objectives for the III PRC Research Centres Programme, the general objectives of the Plan most closely related to the Research Centres Programme were adopted for the Programme.

Objective 1: Promote growth and quality in the Catalan science and technology system

The centres can be said to have made a positive contribution to the Catalan science and technology system. The centres have increased the critical mass of participating groups.

The distribution of economic resources has been adequate and reasonably balanced although private contributions and some of those from European funds have been lower than the rest of the contributions.

The research centres as a whole have created an overall increase in scientific production of marked quality. However in spite of this there are significant differences in the quality and quantity of scientific production between the centres, but this is not directly related to the funding received under III PRC. It is therefore difficult to ascertain the direct influence of III PRC on the evolution of research quality, especially for those centres that received low percentages of contributions from the Programme with respect to their total funding.

Objective 2: Strengthen human resources assigned to R&D

The report states that the contribution to the strengthening of human resources assigned to R&D has been unequal. Significantly, there are low postdoctoral figures and the system has difficulty attracting high-level international researchers and in particular, technologists. The level of incorporation of research support technicians depends on the field of knowledge.

In some cases it is not possible to identify which human resources (professors, researchers, technicians, etc.) have to be entered into the accounts of the centres that are not separate legal entities, since it is not easy to distinguish between personnel directly assigned to the research centres or to the departments, or to the university laboratories of which they form a part.

Objective 3: Promote the internationalization of research carried out in Catalonia

Although it is not possible to draw an overall conclusion, some centres have significantly increased the degree of internationalization of research throughout III PRC.

Objective 4: Stimulate more significant involvement of business in research, development and innovation activities

One of the important areas where the Programme falls short is in not achieving greater involvement of companies in research, development and innovation activities.

Objective 5: Promote better management and greater communication of R&D activities

It is not easy to conclude, on the basis of the available data, whether better management and greater communication of R&D activities have been achieved, since this objective appears to be more an individual initiative of the centres rather than a global strategy under the Programme. It cannot be said that the Programme has contributed significantly to enabling the achievement of this objective.

In very few cases is mention made of quality improvement policies with periodic internal and external evaluations. It will be necessary to consider if this should have been included in the specific objectives of the Programme.

3. Strengths, weaknesses and proposals for improvement

3.1. Strengths

- Overall, the programme is positive.
- Human Resources Capital. Training, professional competencies, dedication.
- The significant increase in resources assigned to the Programme, in line with the funding of III PRC compared to II PRC.
- The creation of a significant number of centres, some with extraordinary international projection.

- The existence of programme contracts for some centres that ensure funding on the basis of objectives achieved and annual financial results.

3.2. Weaknesses

- Lack of specific Programme objectives and generalized programme contracts.
- Need for follow-through on the recommendations produced by the evaluation of II PRC.
- Lack of quality improvement policies, based on internal and external evaluations, involving specialists from outside Catalonia.
- Need for a clear definition of centre typologies and of what is expected of each of these.
- Low transparency in funding management and objectives, and in decision-making on the creation of new centres.
- Absence of a standardized database to record data on activities and productivity of centres.
- Many reference centres appear to be an excuse for some research groups to benefit from alternative funding. In some reference centres neither synergy nor coordination of research activity could be seen and no transversal projects were planned.

3.3. Proposals for improvement

- Establish specific Programme objectives and make them known to all centres.
- Generalise the use of programme contracts to ensure funding on the basis of objectives achieved and annual financial results. Preparation of Directive or Strategic Plans for each centre by the centre itself.
- Evaluate centres against parameters and indicators according to their typology and specific weight within the Programme.
- Optimise administrative management to improve the mechanisms for monitoring and *ex post* [results-based] assessment (standardised report format; creation of activity and productivity data base).
- The Programme will need a strategy defined in relation to the most advantageous types of research centre for each field of knowledge and the conditions specified for the creation, consolidation and the termination of the contributions for a centre.

- Establish an improved interrelation between the Research Centres Programme and the overall Plan. The Research Centres Programme, on its own, is insufficient to strengthen research in Catalonia.
- Increase the connections between the centres and society, and in particular with industrial sectors, to promote the more effective involvement of companies.

4. Reflections on the evaluation process

▪ Evaluation of the Research Centres Programme vs. evaluation of the centres

The methodology for the evaluation of the Research Centres Programme was designed to enable the evaluation of the degree of attainment of the objectives of III PRC directly related to the Programme, considering the absence of specific objectives for the Research Centres Programme. Moreover, the evaluation of this Programme was carried out in the context of the activities of CIAR (Inter-ministerial Committee for Research Assessment) in the overall evaluation of III PRC. In this way the methodology designed was separate from the direct evaluation of the centres. This separation has made the task of evaluation more difficult, since at times it was difficult to separate the evaluation of the Research Centres Programme from the evaluation of the centres themselves. In fact, the Programme evaluation was largely carried out through the individual assessment of the centres. In any case the evaluation of a Plan, through the evaluation of the Programmes that make it up, should not obviate the need for the evaluation of the research centres that have benefited from the implementation of the Plan.

▪ Suitability of the activity report for performing the evaluation process

In the agreements adopted under the CIAR framework, the *ex post* evaluation eliminated many of the phases commonly used in the approach of AQU Catalonia, such as self-reporting or external visits. The evaluation of the Programme was carried out based on the analysis of the annual activity reports sent by the centres to the DURSI. The report recommends returning to the system of evaluation, already employed for II PRC, based on a first self-assessment of the centre (internal evaluation) and a visit to the centre of the assessors before the external evaluation is carried out. It also advocates the preparation of annual self-assessment reports critical to the analysis of the effects of the Programme on the overall activity of the centre and to correct faults in centre activity.

If it is intended that the reports should serve as the documentary basis for the evaluation of the Programme, it would be advantageous to define and require a detailed report for all centres and a system of data capture that enables indicators to be designed for the evaluation of the degree of attainment of objectives. The evolution of the main indicators of the report should be

designed to provide information on the centre's range of activities within the Programme framework.

- **The evaluation process: uniform or adapted to the typology of the centre?**

Great difficulties arise when comparing centres of very different types and purposes. The objectives of their activities can vary greatly and therefore more specific evaluation mechanisms should be established for each type of centre.

- **Heterogeneity of the weight of the centres in the Programme and of the Programme in centre activities**

Evaluation mechanisms should be strengthened for centres receiving more than a certain level of funding and over a certain size. The current situation where the same is required of all centres means that evaluation processes tend to be weak and some centres continue to be reluctant to participate.

- **Profiles of assessors and models of evaluation**

It would be helpful if the expert panels could be internationalized and could intervene in the different phases of the process. The expert panels should monitor progress halfway through the Plan and produce a final report. The evaluation should have consequences, either positive or negative, in accordance with the objectives of and the contributions received by each centre. The mid-term and *ex post* evaluations of the Research Centres Programmes should be agreed upon among the parties involved in the design, implementation and evaluation of research plans according to international guidelines and standards.