Evaluation of the « Fonds National de la Recherche »
(FNR)

Final report
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Introduction

Following the review of the Luxembourg's research and innovation policy performed by OECD in 2005-2006, the Luxembourg Government as well as the FNR have carried out a process of profound strategic re-orientation of the Luxembourg Research System resulting in the Foresight Report in 2007 defining the key strategic orientations of the research and innovation system in Luxembourg. Therefore, as stated in the terms of reference of the evaluation: “There is no further strategic need for a turn-around in the mid-term future. Rather, for the next 3-5 years a priority is set to focus on learning, on fine-tuning, transparency and on efficiency increase”.

Taking account of this background, the present evaluation thus focuses on:

- the role of actors in the funding decisions
- the efficiency and effectiveness of the funding cycle
- the appropriateness and effectiveness of the financial management
- the relevance and effectiveness of the information workflows within the FNR and between the FNR and other actors
- the appropriateness of the performance contract as an instrument for improving the management performance of the FNR
- the appropriateness of the FNR communication approach

Carried out between August and November 2010, the evaluation study has been implemented through the following instruments:

- Collection and analysis of the relevant documents: official documents on research in Luxembourg and documents directly related to the FNR such as the performance contract between the FNR and the Ministry of Higher Education and Research (hereafter the Ministry); the annual reports of the FNR and other internal documents.

- Analysis of the self-assessment report: based on a template prepared by ITD-Eu and validated by the Ministry, the self-assessment report gave the opportunity to the FNR’s Secretariat to provide both quantitative data for assessing to which extent the goals of the FNR have been achieved and qualitative data on the key evaluation questions.

- Consultation of the research stakeholders, which included:
  - Interviews with the FNR management team, public research organisations, external evaluators, members of panel, the Ministry and members of the Board and Scientific Council
  - A workshop with the final beneficiaries of the FNR, i.e. researchers and project leaders
  - A workshop with peers from other national research agencies (Research Council of Norway and Deutsche Forschungsgemeinschaft) and members of the Board and Scientific Council of the FNR.

Annex 1 provides the list of the stakeholders consulted.
1 Overview of FNR activities

The FNR has been established in May 1999 by the law on the creation of a public national research fund. According to its article 2, the FNR missions are:

- to receive, manage and use public and private funding in order to promote research and technological development in the public sector;
- to carry out continuously a dynamic thinking on the strategic orientation of the national research policy, based on the socio-economic and scientific evolutions

In 2005, OECD performed a review of the Luxembourg's research and innovation policy. One major recommendation of this review was to implement performance contracts as the dominant mode of governance between the respective institutions (university, public research centres, research fund, and innovation agency) and their owners or funding organisations, mainly the Ministry of Higher Education and Research.

Following this governance principle, the FNR, on the one hand, and its "owner", the Ministry of Higher Education and Research on the other hand, agreed on a performance contract, covering the period 2008-10. This performance contract follows a basic principle, namely to agree on the achievement of outcomes rather than the achievement of impacts vis-à-vis a global budget and a higher autonomy with respect to the ways through which the FNR will achieve the agreed results. In some instances, an attempt has been made to go a step beyond and to include impact-oriented performance parameters.

The performance contract describes:

- The mission of the FNR
- The financial framework
- The performance indicators

The annex 1 to the performance contract defines three main objectives assigned to the FNR:

- Supporting researchers to build up scientific quality and excellence
- Improving Luxembourg’s research environment and institutional framework
- Promoting scientific culture among a greater public and the young

It is therefore entitled to:

- Implement and manage multi-annual research programmes (MARP) providing funding to research activities carried out by the public research organisations, through thematic or transversal programmes (CORE, INTER, PEARL and ATTRACT nowadays);
- Implement and manage accompanying measures for supporting the development of the national research system
- Manage (since 2008) the doctoral and post-doctoral grant scheme (AFR)
- Implement the promotion of scientific culture among the “grand public” (PSCOM)

It has furthermore a major role to play regarding international attractiveness.

The direct beneficiaries of the FNR are the Luxembourg public research organisations:

- the University of Luxembourg,
- the 4 public research centres, i.e. CRP Gabriel Lippmann, CRP Santé, CRP Tudor and CEPS (Research centre on Population, Poverty and Socio-Economic Policies).

The individual researchers are the indirect beneficiaries of the FNR.
1.1 Brief presentation of the programmes

The FNR supports research activities in Luxembourg through a broad range of tools with a multi-annual budget 2008-2010 amounting to 90,86 M€.

- CORE is the main multiannual research programme, created in 2008 and replacing the former thematic ones called SECOM, NANO, EAU, BIOSAN-PROVIE, SECAL, VIVRE, TRASU: it aims at improving the scientific quality of the Luxembourg research in some priority sectors retained by the government as being of major importance for national economic development, i.e.
  - Innovation in services (IS),
  - Sustainable resource management (SR),
  - New functional and intelligent materials and surfaces and new sensing applications (MS),
  - Biomedical sciences and regulation of chronic, degenerative and infectious diseases (BM),
  - Labour market, educational requirements and social protection (LM); Identities, diversity and integration (ID)

Since 2008, three calls have been launched (the 2010 call is still in progress), resulting in 71 projects selected, for a total amount of 29 M€.

- ATTRACT was designed to attract young researchers not yet established in Luxembourg distinguished by a high level in science or technology and proven experience in a professional research context. It provides the researchers with the opportunity to set up a team and carry out comprehensive research activities.

  The first call has been launched in 2007; so far, only 3 projects have been selected.

- PEARL aims at attracting internationally recognised senior researchers in strategically important research domains, offering them the opportunity to transfer their research activities in Luxembourg and to create a dynamic and demanding research environment. So far, only 2 candidates have been selected.

- INTER was designed for promoting international and European cooperation and increasing the visibility and competitiveness of Luxembourg research. The aims are to promote and to facilitate international scientific cooperation, to create synergies between
research centres within and outside Luxembourg, and to achieve critical mass. It facilitates access to worldwide funding initiatives and enables the FNR to initiate bi- or multilateral arrangements for calls in its own national priority domains in conjunction with other international funding bodies. A mid-term external evaluation of the programme has been carried out in 2009, underlining that INTER is a powerful instrument, especially interesting for a small country and a small research community as Luxembourg (less than 1000 researchers) to achieve a critical mass in some thematic fields and to support the “competitiveness” of public research.

18 projects are ongoing, especially consisting in bilateral partnerships and joint programmes with public research organisations and other research funding agencies at international and European level.

- ACCOMPANYING MEASURES (AM) complete the FNR “tool box” and consist in a wide range of smaller activities and measures, aimed at creating a friendly environment and improving the conditions of carrying out research activities in Luxembourg. They provide funding for: participation in scientific conferences abroad; promotion of scientific culture; training and mobility; conferences, publications, research coordination and international collaborations.

- AFR (Ph.D and Post-doc grants) provides funding for Ph.D and postdoctoral research training projects in Luxembourg and abroad. AFR contributes to the development of human resources in Luxembourg research, expectedly resulting in the long term in an increased number of qualified researchers pursuing a research career beyond their period of AFR funding. AFR postdoc grants receive financial support under the Marie-Curie-Actions of the European Commission (FP7-People-CoFund).

- PROMOTION OF SCIENTIFIC CULTURE (PSC) is aimed at making research and science understandable and interesting to the general public, especially the youngest people. The FNR organises events like the Science Festival or the Researchers’ Night and TV shows (Mister Science). It has also initiated the creation of the ProScience group, a group of Luxembourg institutes and associations created in 2007, for coordinating the activities of promotion of scientific culture.

1.2 The FNR process for selecting projects

The selection process of the FNR for each of this programme is planned to respond to scientific quality objectives and to comply with international research standards. Calls are launched for each programme (except the accompanying measures for which the process has been simplified with open submission throughout the year). Remote reviews are organized, with international experts, selected by the FNR according to their scientific recognition. Interviews are set up for the ATTRACT and PEARL programmes.

The selection process will be discussed further on (see chapter 3.1.1.); however it generally corresponds to the following pattern:
1.3 Quantitative outcomes

So far, from 1999 to 2009, the FNR has supported:

- 187 research projects,
- 2086 accompanying measures (including scientific culture promotion activities)
- 525 research grants (PhD and Postdocs)

for a global amount of 138,897,875€ (committed).

The following table summarizes the FNR interventions, according to the various programmes:
### FNR activities 1999-2009

<table>
<thead>
<tr>
<th>programmes and projects</th>
<th>number of selected projects</th>
<th>total allocation granted</th>
<th>total committed</th>
<th>average cost per project</th>
<th>part of FNR activities</th>
<th>total payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former programmes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secom</td>
<td>11</td>
<td>7 500 000</td>
<td>6 776 184</td>
<td>616 017</td>
<td>5</td>
<td>6 596 658</td>
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<tr>
<td>Nano</td>
<td>6</td>
<td>6 700 000</td>
<td>6 410 956</td>
<td>1 068 493</td>
<td>5</td>
<td>6 284 426</td>
</tr>
<tr>
<td>Eau</td>
<td>9</td>
<td>5 000 000</td>
<td>4 634 204</td>
<td>514 912</td>
<td>3</td>
<td>4 614 452</td>
</tr>
<tr>
<td>Bisan/Provie*</td>
<td>20</td>
<td>10 500 000</td>
<td>9 865 372</td>
<td>493 269</td>
<td>7</td>
<td>8 206 502</td>
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<tr>
<td>Vivre*</td>
<td>35</td>
<td>12 000 000</td>
<td>11 881 014</td>
<td>339 458</td>
<td>9</td>
<td>9 423 187</td>
</tr>
<tr>
<td>Trasu</td>
<td>1</td>
<td>6 000 000</td>
<td>5 862 046</td>
<td>5 862 046</td>
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<td>4 742 000</td>
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<td>407 493</td>
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<td>967 000</td>
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<td>2</td>
<td>656 000</td>
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<td>Inter*</td>
<td>18</td>
<td>17 700 000</td>
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<td>-</td>
<td>5 000 000</td>
<td>2 500 000</td>
<td>4</td>
<td>-</td>
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<td>Accompanying measures**</td>
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<td></td>
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<td>Former AM***</td>
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<td>1</td>
<td>895 474</td>
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<td>1 647 098</td>
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<td>AM-4</td>
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<td>1 098 536</td>
<td>1</td>
<td>983 517</td>
<td></td>
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<td>Training and research grants</td>
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<td>BFR****</td>
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<td>646 540</td>
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<td>AFR</td>
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<td>34 983 538</td>
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<td>25</td>
<td>11 611 999</td>
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<td>PhD</td>
<td>205</td>
<td>13 633 334</td>
<td>25 904 314</td>
<td>126 363</td>
<td>19</td>
<td>8 713 680</td>
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<tr>
<td>Post-doc</td>
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<td>3 304 646</td>
<td>9 079 224</td>
<td>104 359</td>
<td>7</td>
<td>2 898 319</td>
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<td>TOTAL</td>
<td></td>
<td>156 084 520</td>
<td>138 897 875</td>
<td>67 867</td>
<td>100</td>
<td>74 633 870</td>
</tr>
</tbody>
</table>

Source: FNR Annual Activity Report 2009

### 1.3.1 Allocation according to the programmes

Programmes, projects and activities are of very different scales: they vary from small accompanying measures with an average cost of 2 000€ to comprehensive research projects with an average cost of 400 000 € (CORE projects) and even more for the ATTRACTION and PEARL projects.

In terms of commitments:

- **CORE**, since 2008, is the main FNR programme representing 31% of the total FNR commitments over the period. The former thematic research programmes represent 38% of the total activity of the Fund since its creation.

- With 26% of the total commitments, the BRF and AFR Grant Scheme are the second largest activity of the FNR. The FNR is managing the research training grants only.
since 2008, when the BFR were changed into AFR Grant Scheme and transferred from the Ministry for Higher Education and Research to the FNR.

- INTER, PEARL and ATTRACT, focused on the international attractiveness of the Luxembourg research system, represent altogether almost 10% of the FNR commitments, showing the funding effort made for improving the visibility of Luxembourg on the international research scene and the willingness to attract high level scientists.

- Accompanying measures represent only a minor share of the total commitments with 6% of the total.

1.3.2 Allocation according to the beneficiaries of the FNR

The direct beneficiaries of the FNR are the public research organizations of Luxembourg, which means University of Luxembourg, CRP Gabriel Lippmann, CRP Santé, CRP Tudor, CEPS.

According to the dashboard covering the year 2009,

- the University of Luxembourg is by far the largest beneficiary of FNR support with almost 9 M€ of payments in 2009 (mainly through the BFR/AFR Grant Scheme)

- the CRP Gabriel Lippmann is the second major beneficiary with more than 4 M€ (mainly through the MARP programmes, i.e. CORE, ATTRACT, PEARL, INTER)

- The CRP Tudor and CRP Santé are ranking third with almost 4 M€ each, whereas the CEPS is far behind with less than 1 M€ of payments

![Payments in 2009 by Institution](source: FNR Dashboard – March 31, 2010)
1.3.3 Allocation according to the scientific fields

Six scientific fields were determined within the framework of the CORE programme as being the thematic priorities of the FNR for the coming years:

- Innovation in Services (IS)
- Sustainable Resource Management (SR)
- New functional and Intelligent Materials and Surfaces and New Sensing Applications (MS)
- Biomedical sciences/regulation of chronic, degenerative and infectious diseases (BM)
- Labour market, educational requirements and social protection (LM)
- Identities, diversities and integration (ID)

They are the scientific pillars of the CORE programme, but refer to the other programmes and activities as well.

If four of them mainly regard ‘hard’ science (IS, SR, MS, BM) and two concern social sciences and humanities (LM, ID), the fields of research are multidisciplinary and involve various specialities dealing with the same topic.

According to the 2009 figures (dashboard on the distribution of 2009 payments by scientific domains), biomedical (BM) and social sciences and humanities (LM-ID) are the two fields receiving the strongest support from the FNR, materials sciences (MS) coming third. Concerning LM-ID, FNR support comes mainly through the AFR Grant Scheme.

![Payments in 2009 by Domain](image)

Source: FNR Dashboard – March 31, 2010
2 Analysis according to the evaluation criteria

The overall FNR activity can be assessed through the following criteria:
- the project cycle
- the financial management
- the role of the actors
- the communication and information flows
- the effectiveness of the performance contract as a management tool

2.1 The effectiveness of the project cycle, from selection to monitoring and evaluation

2.1.1 A selection process that meets the international standards

A selection process based on scientific quality criteria....

For each instrument (multi-annual research programmes – MARP CORE; ATTRACT, PEARL, AM and AFR grant scheme), there are different procedures implemented for the project evaluation, for the funding decision as well as for the monitoring of the supported projects.

However, with regard to the selection process, there is a common feature: the scientific quality of the submitted projects is the most important criterion, consistently with the first objective of the FNR to support researchers to build up scientific quality and excellence.

<table>
<thead>
<tr>
<th>Selection criteria</th>
<th>AFR</th>
<th>CORE</th>
<th>ATTRACT</th>
<th>PEARL</th>
<th>AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of the research</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Applicant's profile</td>
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</tr>
<tr>
<td>Quality of host institution (and supervision)</td>
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<td>Interest of project in Lux.</td>
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<td>For Postdoc: potential for career development</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Coherence with the programme theme</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Scientific quality and originality of project</td>
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<tr>
<td>Quality and efficiency of the project plan</td>
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<td>●</td>
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</tr>
<tr>
<td>Dissemination and valorization of the research results</td>
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<td>●</td>
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<td>Track-record and potential of candidate</td>
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<td>Scientific quality and originality of project</td>
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<td>●</td>
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<tr>
<td>Short- to long-term outcomes of the proposed project</td>
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<td>●</td>
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<tr>
<td>Value of strategic development</td>
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<td>●</td>
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<td>Scientific quality and innovativeness</td>
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<tr>
<td>Feasibility</td>
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<tr>
<td>Expected outcomes</td>
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<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Excellence of the researcher</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Or Attractiveness of Business Case to potential candidates</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Scientific quality</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Scientific interest</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Relevance for Luxembourg</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Envisaged objectives and results of the activities</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

That is particularly true for the multi-annual research programmes CORE and the programmes aiming at attracting high profile researchers in Luxembourg (ATTRACT and PEARL).

E.g. for the CORE programme, the selection criteria include:
Criteria | Relative weight
---|---
The coherence with the programme theme | Yes / No criterion
The scientific quality and originality of project | Very high
  - innovativeness of idea
  - innovativeness and appropriateness of approach
The quality and efficiency of the project plan | High
  - Competence and expertise of applicant team
  - Feasibility and efficiency of the project plan
The dissemination and valorization of the research results | Medium
  - Intended short-term outcomes
  - Intended long-term impacts

… ensuring the independency of the selection

The selection procedure of each instrument meets the international standards compared to other research funding agencies in Europe, ensuring globally the independency of the selection:

- The selection procedure is based on a multi-level and peer-review system for the main programmes. The different procedures used by the FNR instruments are designed specifically to fit the purpose of selecting high quality projects.

The main steps of the selection are:
- Remote review
- Experts Panel evaluation
- Interviews with applicants (ATTRACT / PEARL)

<table>
<thead>
<tr>
<th>Project appraisal</th>
<th>AFR</th>
<th>CORE</th>
<th>ATTRACT</th>
<th>PEARL</th>
<th>AM</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-stage review for PhD and postdoc</td>
<td>Remote evaluation by 2 experts (for PhDs: mainly panel members; for postdocs: mainly external reviewers)</td>
<td>Remote evaluation by 3 experts</td>
<td>Thematic expert panel per domain (6): (evaluation synthesis by panel): funding recommendatio n (evaluation synthesis per proposal by panel)</td>
<td>Remote evaluation by 3 experts</td>
<td>Reviews sent to applicant several weeks prior to interview panel</td>
</tr>
<tr>
<td>Project appraisal</td>
<td></td>
<td></td>
<td>Pre-proposal: conformity check by FNR secretariat and panel members</td>
<td>Pre-Proposal: conformity check by FNR secretariat and panel members</td>
<td>In preliminary stages, the conformity is checked by FNR secretariat and panel members if necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Full Proposal: 2-stage review</td>
<td>Full Proposal:</td>
<td>Full Proposal:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Remote evaluation by 3 experts</td>
<td>Reviews sent to applicant several weeks prior to interview panel</td>
<td>Remote evaluation by 4-5 experts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Panel conducting interviews with all applicants. Funding recommendation given for 1-2 applicants.</td>
<td>Panel conducting interviews with individual applicant and representative of institution.</td>
<td>Reviews sent to applicant several weeks prior to interview panel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Panel conducting interviews with individual applicant and representative of institution.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Funding recommendation given for 1-2 applicants.</td>
</tr>
</tbody>
</table>

After submission, internal administrative check based on AM eligibility and selection criteria

AMs > 7,500 €: external remote expert evaluation

AMs < 7,500 €: internal evaluation
| Panel composition: | > 30; broad coverage of disciplines; 2-3 thematic groups | For each of the 6 thematic CORE groups: one rapporteur and 4-6 thematic experts | Panel consists of 5 standing members covering various domains and includes one of the 3 initial written reviewers of the respective applications | applicants. |

- As the RCN (Norway) and DFG (Germany), the FNR has the position of giving a feedback to the applicants on their project appraisal (complete remote reviewers evaluation, and synthesis of the panel discussions): the FNR sends the applicant the anonymised reviews of the evaluation experts and a synthesis of the panel discussion (CORE).

  The feedback is well appreciated by the research community giving the possibility to the applicants to improve their proposals for future calls, then contributing to increase the quality of research, or at least the quality of the proposals.

- The remote reviewers and panel members are selected on a scientific basis through desk research and CV analysis, by the Programme Managers.

  The remote reviewers and members of panels are coming from abroad at 99%, ensuring a high level of independency with regard to the Luxembourg research community. This is perfectly consistent with the small size of the research community.

  In addition, the remote reviewers and members of panels are regularly evaluated by the FNR Programme Managers:

  - The FNR Programme Managers have developed a notation grid for evaluating the relevance and effectiveness of the contribution of the remote reviewers.
  - For what regards the members of the experts panel, there is no formal evaluation grid developed by the FNR, however two Programme Managers at least attend the panel meetings and organise, after the end of them, an internal debriefing to discuss the relevance of the panel members with respect to the programmes concerned.

  The FNR is currently developing and testing a software tool (COLLEXIS) for reducing the time necessary to search for panel members while maintaining a high level of quality.

  The independency of the selection process has been recognized to some extent by other research agencies, such as DFG in Germany and SNF in Switzerland, through the bilateral agreements signed with these institutions for financing collaborative projects, within the framework of the INTER programme.

  …and effective for strengthening the capacity of the research community to run competitive research activities

  There is a clear consensus among the different stakeholders (remote reviewers, panel members, researchers, FNR secretariat, etc.) on the fact that the FNR has made strong efforts in the five past years for improving the quality of the research projects.

  This is particularly true for the CORE programme, the main objective of which is to improve the scientific quality of the public research in some identified priority domains. In consequence, the success rate, compared to the FNR former programmes, felt from 75% to
around 40% in the CORE programme. Out of 50 M€ credits available for 2008-2009, only 28.8 M€ have been committed so far (since 2008 and three calls). The success rate to the FNR calls for proposals are now rather similar to those of other national research agencies, like DFG and RCN. It reflects the stronger focus on scientific quality through the organisation of a more independent and transparent selection process and the support provided by the FNR to improve the capacity of the researchers to present higher quality proposals (e.g. through the organisation of training sessions on how to draft a good proposal).

Regarding the AFR grant scheme, an effort has been made to improve the scientific level of the applicants. The success rate dropped from approx. 80% under BFR to 50-60% under AFR, ensuring a greater selectivity of the funding scheme. However, this figure remains relatively high and demonstrates the hesitation of the FNR to choose between a “mass” (funding every Ph.D) or a “selective” (funding high quality profiles supervised by high quality researchers and professors) strategy.

Concerning the ATTRACT and PEARL programmes, the issue is not the success rate, but the number of applications, which remains relatively low compared to the planned budget. By the end of 2009, only 3 and 2 projects funded respectively under ATTRACT and PEARL programmes. The FNR stresses in the SAR: “this may be surprising in a developing research system like Luxembourg but may show that Luxembourg has not yet reached sufficiently high international visibility to attract the high-caliber researchers despite the fact that the institutions seem to be actively looking for talent”.

2.1.2 A selection process still facing specific problems stressed by the direct and final beneficiaries

There has been some criticism on the lack of transparency of the selection process but they tend to decrease over time, showing that the FNR is now entering into a maturation phase and is better accepted and understood by the Luxembourg research community.

However, as for every organisation, it is difficult to satisfy at 100% the concerns expressed by the direct and final beneficiaries, especially for what regards issues on transparency of the selection process. Despite the on-line publication of a number of documents and guidelines by the FNR, researchers appear to be still expecting a clear vision of how the decision-making process works and a “decision tree” explaining in a synthetic way what are the different stages of the selection and decision-making process, what is the role of the different actors in the selection process and at which stage, what are the purposes of the different stages, and how are selected the evaluation experts and panel members. The document called “Guidelines for Applicants” prepared by the FNR for the CORE programme does not include such information, and the information on these issue is not easy to find on the website (see recommendation 5).

This reflects some lack or deficit of communication of the FNR towards the researchers on the issue, even if the researchers’ host institutions are normally fully aware of the selection process (as they are seating in the Scientific Council).

In addition, there is a room of manoeuvre for strengthening the feedback to the applicants and their host institutions:

- Researchers are requesting for more details in the motivation guiding the decision through the communication of the full text not only of the remote reviewers evaluation, but also the full text of the panel members discussion, instead of a synthesis prepared by the FNR Secretariat. The synthesis is somehow seen as “too synthetic”
and thus, prevents the researchers to really understand the motivation of the
decision..

- Regarding specifically the AFR grant scheme, the complete remote reviews should
systematically be sent not only to the postdoc applicants and their supervisors, but
also to PhD applicants and their supervisors who so far received only a summary of
the remote reviews.
- In addition, regarding the CORE programme, more explanations of the FNR decision
of not funding the proposal is needed.

A third issue raised by the CRP central administrations, but also by some members of the
Board and Scientific Council, regards the selection criteria that would insufficiently integrate
the question of the economic exploitation and valorisation of the research results in the
appraisal of the projects. The selection process is almost exclusively based on academic
criteria, including the evaluation of the dissemination and valorisation of the research results.
The application forms do not let room for evaluating the interest of the project for the
Luxembourg economy and society and the socio-economic impacts of the project.
However, it is worth mentioning that the panels include experts with an industrial profile, even
though this is not systematic. In addition, the composition of the Board and Scientific Council
includes industry profiles. Moreover, the cooperation agreement to be signed with Luxinnovation by the end of 2010 should strengthen the cooperation of the two institutions for
the valorisation of research results.

In addition, such a criticism from CRPs is quite normal in a country where historically the
creation of the first public research organizations in 1987 has been supported for developing
applied research activities, addressing socio-economic needs.

2.1.3 The funding and the monitoring of the projects: light and flexible
procedures

Alike the selection process, the funding procedure and the monitoring process are
consistent with international standards

The procedures obviously differ between the various FNR instruments, but some common
features are worth mentioning:

Before the submission, procedures rely on:
  - Two calls per year for the AFR grant scheme, annual calls for CORE and ATTRACT,
    and open calls for PEARL, INTER and AM
  - On-line submission for the AFR grant scheme and CORE, to be on-line in 2011 for all
    programmes
  - Pre-proposal check for CORE, ATTRACT, INTER and preliminary discussion with the
    FNR for PEARL

After the submission, monitoring procedures rely on:
  - The signature of the contract with the host institution of the principal researcher after
    which a first instalment payment covering the period until the first interim report is
    paid
  - The principal researcher or investigator (PI) must provide an interim report (AFR,
    CORE, ATTRACT, PEARL) in general on an annual basis
  - The evaluation of the interim report is managed by the FNR Programme Managers,
    assisted in case of doubt by evaluation experts or panel members which participated
    to the selection process. The validation of the interim report is a condition for the next
    payment to the beneficiary
  - At the end of the project, the PI must provide final reports:
A scientific report which is internally evaluated by the FNR Programme Managers for the AFR Grant Scheme and AM; and evaluated by international peers and FNR Programme Managers for CORE, ATTRACT, and PEARL.

A financial report which is generally prepared by the host institution and evaluated by the FNR Programme Managers. In addition, financial audits of randomly chosen projects may be performed by the external auditor who performs the annual FNR audit.

- The last payment is subject to the validation/acceptance of the final reports.

**Light and flexible procedures well appreciated by the researchers and PROs**

As the FNR stresses in the Self Assessment Report, “the overall concept is to make a quality selection at the beginning and to have a relatively light monitoring reporting during the project implementation. As far as possible the involvement of external experts in the course of the project is avoided”. The external experts are only required at the final stage for the most “expensive” instruments (CORE, ATTRACT, PEARL). In addition, the option chosen to organise financial audits at the random seems coherent and efficient in a Country which has only 5 public research organisations (PROs), i.e. beneficiaries, with their own controlling system.

The researchers unanimously consider that the reporting requirements do not result in a great workload. They also stress the flexibility of the procedures and the willingness of the FNR to make adaptations to better suit the needs of the research community (researchers and PROs). The FNR is constantly working on the improvement of the funding procedure together with the researchers and PROs, which is a positive result, though it may have some negative effects (see hereafter).

This can be illustrated, for example, by several changes occurred in the procedures of funding for opening new opportunities and taking into account a new situation:

- **AFR grant scheme**:
  - Reduction of the number of calls from 4 to 2 for Ph.D and postdoc
  - Introduction of the possibility for the PROs to cover Ph.D candidates through the CORE programme, outside the AFR scheme. Formerly, Ph.D collaborating in the CORE projects had to apply separately through the AFR scheme.
  - Adaptation of the timing of the calls to the academic calendar since 2010 with two calls in March (response in July) and September (response in December) (in 2008 the calls’ deadlines were in October and December; in 2009 in March, June, and September).

- **CORE programme**:
  - Introduction of the “Junior Track” procedure for a principal investigator having received his/her Ph.D degree recently providing them with a possibility to submit a proposal in line with their track record.

- **PEARL programme**:
  - possibility for the PROs to submit an application without a candidate, i.e. presenting only the required candidate profile and a case for the development of a particular research area.

**But still some minor issues to be dealt with**

The **timing of the funding cycle** is questionable. This covers two issues:

- The timing of the calls and the selection process:
  - CORE : the researchers and their host institution consider reasonably the timing not well suited to the academic calendar and propose to anticipate the timing of the communication of results to June/July, at the latest September (instead of the end of October) for two reasons:
It will foster the recruitment of the researchers
It will allow the host institution to anticipate the funding received for the preparation of their annual budget (prepared in September/October)

- Until 2009, researchers and host institutions also called for an adaptation of the timetable of the AFR grant scheme more in line with the academic calendar, which is done since 2010 with two annual calls in July and September.

- The duration of the CORE projects, 2-3 years, is a little bit short for implementing large research projects, in particular those involving Ph.D.s

The FNR experienced regularly reporting delays (for interim and final reports) whatever the type of instruments, even for the AM, resulting in the postponement of the project funding. The FNR signals two reasons for this situation:

- the insufficient anticipation of the reporting requirements by the beneficiary institutions, to the extent to which the financial report are prepared by the host institution of the PI
- the fact that host institutions have a sufficient amount of money and then do not need the money transfer immediately, then preventing an efficient management

However it is worth to mention that delays in reporting are also due to the calendar of reporting which does not coincide with the calendar of the PROs. The delivery date of the interim reports is by the end of March; at the same moment, the PROs are preparing the closure of their budget and have no sufficient time for coordinating the delivery of the financial reports.

In addition, researchers and their host institutions consider that the submission of the proposals, for what regards the administrative requirements, should be simplified. For a same call, each applicant must submit the same type of administrative documents or must provide unnecessary documents, e.g.:

- the description of the public research institutions activities (CORE, AFR)
- the description of the research works of the laboratories (CORE, AFR)
- the documents proving that the PI (CORE) or the supervisor (AFR) is habilitated to conduct research activities, whereas he/she is employed by a research institution (habilitated to conduct research projects)

This is particularly relevant for the accompanying measures that are of a small amount. However, it appears quite difficult to find room of manoeuvre for simplifying the administrative requirements, in the extent to which remote reviewers and panel members need the description of the PROs activities and the description of the research works of the laboratories for assessing the coherence of the projects and their scientific quality.

2.2 The effectiveness of the FNR financial and internal management

2.2.1 A financial management allowing a long-term planning of commitments, expenses and income

The FNR is a young structure and has long been a "work in progress" since its creation in 1999. Some of the major changes are quite recent and 2008, with the implementation of the first performance contract, has been a year of reforms regarding the management of the FNR.

The performance contract, together with the logical framework approach, reflect a Results-Based Management (RBM) approach, which means, according to the OECD definition, a "management strategy focusing on performance and achievement of outputs, outcomes and
impacts", and a Project Cycle Management (PCM), which is a tool for “defining the tasks and management functions to be performed in the course of a project’s lifetime (identification, preparation, appraisal, implementation/supervision, evaluation, completion and lesson learning)”.

In addition, the implementation of the performance contract resulted in the adoption of a new accountancy system based on the commitments similar to private-sector accounts (comptabilité d’engagement) and a cost accounting system (comptabilité analytique): the former is the way to reflect the FNR activity, measured in terms of commitments and not in terms of cash flow and the later allows to make the link between the activities and the management costs.

Generally speaking, the FNR has a simple and transparent funding scheme:

- The FNR has only one supervisory authority, the Ministry for Higher Education and Research. It is funded by only one ministry (and by the EU Marie Curie Initiative for a part of the AFR programme), which makes it easy to negotiate budgets, especially when comparing with the German and the Norwegian systems: research in Germany is co-funded by the State, universities and Bundesländer, while the Research Council of Norway (RCN) is funded by 16 various ministries, the 3 major ones being the Ministry of Higher Education and Research, the Ministry of Innovation and Competitiveness and the Ministry of Energies.

- The FNR has flexible management rules and a large autonomy for its management: the 2008 convention defines the Ministry contribution to the FNR for 3 years in a multiannual budget, making it easier to plan activities and development. The global amount cannot be modified, whereas the annual contribution can vary. The FNR has a possibility to rearrange up to 20% this budget, among the different instruments, after validation by the Ministry, within the framework of the performance contract 2008-2010.

- The annual financial contribution is made in 2 "steps" (60%-40%) ensuring there is no cash flow problem.

However, in terms of financial management, the main question remains the discrepancy between the annual planned and the actual payments resulting in important credits on bank accounts (“avoirs en banque”), in a context in which the economic and financial crisis puts a stronger pressure on the public budget and the efficiency management of public funding.

When drafting the first performance contract, the FNR and the Ministry were perfectly aware of this issue, which is quite normal for a funding agency benefiting from a multi-annual budget and funding multi-annual research projects over two and three years. Two indicators were identified to cover this issue and measure:

- the capacity of the FNR to manage its financial resources, including the long-term planning of commitments, expenses and income, especially for reducing the reserves on bank accounts (indicator on reducing the difference between planned and actual payments for each priority action (with a reduction target of 20%) - IM3);

- the absorption capacity of the national innovation system (indicator on total expenditure 2008-2010 (planned vs. realised) – DR1).

Figures provided by the FNR in the self assessment report on the two indicators show:

- The FNR made progress with respect to the first indicator by reducing the difference between the planned and actual payments (-23% and -21,7% in 2008 and 2009). The planned target of a -20% reduction should be achieved in 2010.
• Out of 105 M€ of expected expenditure from 2008 to 2010, only 42,8 M€ have been realised by the end of 2009 (i.e. 40%)

The situation reflects the overestimation of the absorption capacity of the national research system “by more than 20%, e.g. from 2008-2010, only 60% of the available budgets in the CORE programme have been allocated so far” (Self Assessment Report), in spite of the efforts made by the FNR to train researchers to present good quality research proposals, to adapt procedures and to create new programmes (e.g. Junior Core for young researchers, ATTRACT and PEARL) fostering the development of new projects.

It also reflects the coherence of the strategy of the FNR, as stated in the performance contract and in the law, not to fund projects with an insufficient level of scientific quality, at least within the framework of the multi-annual research programmes (MARP).

However, willing to absolutely reduce this discrepancy by keeping the same level of planned expenditure, with a view to improve the financial management efficiency of the FNR, would lead to a paradox: the demand for good management would lead to increase the number of funded projects, through a decrease in the quality threshold in order to fulfil the contractual obligations, while the strategic priority of the FNR is to maintain and improve the scientific quality.

A way we see to solve the paradox – reducing the discrepancy by maintaining the quality threshold – would consist in making stronger efforts for improving the absorption capacity of the PROs which supposes:

• to improve the researchers’ skills in building high quality research projects and writing good proposals
• to pay attention to the transfer of knowledge from senior to junior researchers, through boosting the quality of the supervision of the Ph.D and postdocs in the analysis of the proposals in order to upgrade the skills of the young researchers in building research projects
• to organise in the public research organisations an internal scientific pre-screening of the proposals in order to reduce the workload of the FNR and raise the success rate of the funding instruments

In addition, the FNR should take into account in the budget planning over the 3 years period of the performance contract the absorption capacity of the PROs in order to do not over evaluate the budget needed; but also it should simplify the management of the programme and the selection process (see. Recommendation 4 and 5).

2.2.2 The effectiveness and efficiency of the FNR management

The implementation of the performance contract resulted in the streamlining of the internal organisation of the FNR and a stronger visibility of the organisation to the researchers. The latter are stressing unanimously that the quality, availability and professionalism of the FNR staff are unquestionable.

The FNR Secretariat is subdivided into four formalised departments (MARP, AFR, AM, PSCOM), reflecting the four main activities, each being coordinated by a Programme Manager. Furthermore, several Programme Managers take over additional tasks such as quality insurance (evaluation & procedures), support operations (ad hoc internal projects, drawing resources from the different teams), accounting, IT support and strategic planning (coordination of the Performance Contract).
From 2006, the FNR number of staff dramatically increased from 7 to 23 in 2010\(^1\), reflecting the enlargement of the missions (transfer of the BFR scheme to the FNR and management of the FNR); the development of new programmes (PEARL and ATTRACT in 2008\(^2\)); and the strengthening of the activities in the field of the promotion of the scientific culture and communication; but also the increase of the budget over the period 2008-2010, although the budget increased proportionally less than the staff number.

The 23 people of the FNR Secretariat represent currently 21 full time equivalent (FTE) distributed as follows:

<table>
<thead>
<tr>
<th></th>
<th>MARP</th>
<th>AFR</th>
<th>AM</th>
<th>PSCOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009 programme</td>
<td>22 491 039€</td>
<td>28 144 459€</td>
<td>1 758 669€</td>
<td>818 419€ (payments)</td>
</tr>
<tr>
<td>commitments</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Programme manager (FTE)</td>
<td>2,7 (5,5 PM)</td>
<td>2,4 (4 PM)</td>
<td>0,5</td>
<td>1 (Com)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 (PSC)</td>
</tr>
<tr>
<td>Assistant programme</td>
<td>1,6 (2 APM)</td>
<td>1,8 (3 APM)</td>
<td>1</td>
<td>0,5 (Com)</td>
</tr>
<tr>
<td>manager (FTE)</td>
<td></td>
<td></td>
<td></td>
<td>0,5 (PSC)</td>
</tr>
<tr>
<td>Total FTE</td>
<td>4,3</td>
<td>4,2</td>
<td>1,5</td>
<td>4</td>
</tr>
<tr>
<td>Time sheet</td>
<td></td>
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<tr>
<td>(approximate figures)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Preparation</td>
<td>10%</td>
<td></td>
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<tr>
<td>Communication</td>
<td>5%</td>
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<tr>
<td>Selection process</td>
<td>70%</td>
<td></td>
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<tr>
<td>Call communications</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>and promotion</td>
<td>40%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selection process</td>
<td>30%</td>
<td></td>
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</tbody>
</table>

\(^1\) See Self Assessment Report, page 25 « from 7 to 23 persons in 4 years ».
\(^2\) CORE programme replaces the former thematic programmes,
The MARP, AFR Grant Scheme and PSCOM mobilise a similar workload with about 4 to 4.3 FTE. However, compared to the annual commitments, the PSCOM department mobilises a higher number of FTE. This is quite normal to the extent to which the FNR staff is directly involved in the management and implementation of the PSCOM activities which have not been outsourced to other organisations, and in spite of the efforts made for ensuring a stronger complementarities between the research stakeholders in Luxembourg (see hereafter on ProScience Group). For what regards MARP and the AFR grant scheme, the FNR staff is managing the preparation, the supervision of the selection process and the monitoring of the research projects, as well as training and networking activities.

The remaining 7 FTE (33% of the FTE) are dedicated to internal coordination, internal projects, IT, accounting and representation of the FNR or Luxembourg at international level. This figure is quite important in a small structure, the size of which should facilitate the informal information exchange and the management of the internal projects. However, it should also be noted that it reflects both: the importance attached to ensure a strong international coordination with an effective information workflow, internally and towards the beneficiaries; and the development of international collaborations.

Since 2008, the management of the FNR is made according to a logical framework approach seen as a monitoring tool of the performance contract, where indicators and costs are related to programmes. Thus, with the implementation of the new accountancy system (“comptabilité analytique”), running costs (“frais de gestion”, including salaries and other costs among which expert fees3) can be calculated for each of the FNR activities.

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<tbody>
<tr>
<td>Salaires</td>
<td>386 783 €</td>
<td>1,72%</td>
<td></td>
<td>3,02%</td>
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<tr>
<td>Autres (inclus experts)</td>
<td>798 117 €</td>
<td>3,55%</td>
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<td>6,23%</td>
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<tr>
<td>Mesures</td>
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<td>5,7%</td>
<td>1 758 669 €</td>
<td>14,20%</td>
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<tr>
<td>Salaires</td>
<td>125 880 €</td>
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<td>10,71%</td>
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<tr>
<td>Autres (inclus experts)</td>
<td>41 121 €</td>
<td>2,34%</td>
<td></td>
<td>3,50%</td>
<td></td>
</tr>
<tr>
<td>AFR</td>
<td>681 337 €</td>
<td>23,3%</td>
<td>28 144 459 €</td>
<td>5,77%</td>
<td></td>
</tr>
<tr>
<td>Salaires</td>
<td>422 031 €</td>
<td>1,50%</td>
<td></td>
<td>3,58%</td>
<td></td>
</tr>
<tr>
<td>Autres (inclus experts)</td>
<td>259 305 €</td>
<td>0,92%</td>
<td></td>
<td>2,20%</td>
<td></td>
</tr>
<tr>
<td>TOTAL instruments</td>
<td>2 033 238 €</td>
<td>69,6%</td>
<td>52 394 167 €</td>
<td>7,9%</td>
<td></td>
</tr>
<tr>
<td>Salaires</td>
<td>934 695 €</td>
<td>1,78%</td>
<td></td>
<td>3,63%</td>
<td></td>
</tr>
<tr>
<td>Autres (inclus experts)</td>
<td>1 098 543 €</td>
<td>2,10%</td>
<td></td>
<td>4,26%</td>
<td></td>
</tr>
<tr>
<td>PCS</td>
<td>308 512 €</td>
<td>10,6%</td>
<td>818 418 €</td>
<td>37,70%</td>
<td></td>
</tr>
<tr>
<td>Salaires</td>
<td>259 207 €</td>
<td></td>
<td></td>
<td>31,67%</td>
<td></td>
</tr>
<tr>
<td>Refacturation frais secrétariat</td>
<td>49 304 €</td>
<td></td>
<td></td>
<td>6,02%</td>
<td></td>
</tr>
<tr>
<td>Projets internes</td>
<td>580 358 €</td>
<td>19,9%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3 Including payment of the peers (written reviews, panel members), travel and accommodation costs.
For 2009, the running costs of the FNR stand at 2,922,108€, which represent 9.89% of the 2009 payments. Behind this average, figures show high discrepancies:

- on the one hand, for MARP and AFR, the running costs stand below the average: 9.25% for the CORE, PEARL, ATTRACT and INTER programmes and 5.77% for the AFR Grant Scheme;
- on the other hand, the running costs of the AM and PSCOM activities are well above the average: respectively 14.20% (AM) and 37.70% (PSCOM).

Comparisons with other national research agencies in Europe are rather complex: the areas of intervention differ greatly from one agency to another (promotion of scientific culture, international representation, etc.), the small organisations like FNR in a small country have automatically more running costs in proportion to larger ones (“critical mass”); moreover, the FNR (like the Research Council of Norway) preferred to develop in-house capacities rather than outsourcing.

In addition, the assessment of the efficiency of the FNR management is more relevant through looking in detail into the different functions, instruments and outputs, and the administrative and management workload generated by the management of these functions and instruments. It results from the analysis that there is clearly room of manoeuvre for streamlining the procedures in a more efficient way. This concerns mainly two funding instruments of the FNR:

- The Accompanying Measures: small amounts are allocated through a relatively long and complicated administrative process, consuming a lot of time and efforts. For instance, in addition to the four classical FNR selection criteria, each AM has its own selection criteria; for AM with a budget superior to 7,500€, the AM selection process is based on a remote review; interim reports are needed for projects whose duration is longer than 6 months, etc.

If the AMs play certainly an important role for providing a friendly environment to research activities (the FNR plans to evaluate the AMs in 2011 to assess their impact), it remains that activities supported through this scheme could be supported directly by the public research organisations, namely the AMs targeting training and mobility of researchers.

- Compared to MARP programmes, the AFR grant scheme mobilises the same human resources effort (4.2 FTE, 500 on-going grants in May 2010) for a larger budget (payments), but with less running costs.

However, in spite of the recent improvements made by the FNR (reduction of the number of calls, possibility of funding through CORE, on-line applications, etc.), it comes out from the discussion with the different stakeholders that management requires a lot of administrative efforts (especially for what regards the Ph.D) for two reasons:

  - The selection process is too heavy and long, similar to the MARP (remote reviews by two experts and panel meeting; evaluation too much focused on the research project, and not on the quality of the Ph.D supervision and training). It prolongs the time for decision and has counterproductive effects with respect to the attraction of foreign Ph.Ds.
  - The time dedicated by the FNR staff to troubleshooting is increasing to the detriment of the monitoring of the scheme results.
An evaluation of the AFR scheme is in process and should lead to changes regarding a simplification of the procedures.

### 2.3 The role of the actors and the effectiveness of their relationship

The previous part on the project funding scheme raised the question of the role of the actors. The main points to discuss hereafter regard:

- the distribution of competences between the Scientific Council and the Board
- the institutional dialogue between the Ministry, the FNR and the public research organisations

#### 2.3.1 A – theoretically – well defined distribution of competences

In theory, the role of the different actors is clearly set:

- The applicants (researchers) prepare their research proposals in response to the calls launched by the FNR.
- The host institutions of the applicants are submitting officially the proposals, ensuring that applicants are fully aware of their commitments. In addition, the central administration of the host institution provides support to the applicants by coordinating and preparing the submission of the interim and final reports (financial reports).
- The FNR secretariat is in charge of managing the daily business of the FNR: handling of the calls, management of the selection process and monitoring of the project, proposition of adaptation, management of the communication and information workflow.
- The projects are evaluated either internally (AM), or (mainly) by external experts (remote reviewers and panels) for MARP and AFR Grant Scheme.

The Scientific Council assists the Board in:

- Elaborating and submitting proposals regarding the objectives of the national policy on science, priority actions for achieving these objectives and multi-annual programmes resulting from these priority actions
- Assisting the Board for the monitoring of the activities funded by the FNR
- Contributing to evaluate the results achieved with the aim of guaranteeing the scientific quality and the socio-economic relevance of the FNR
- Formulating proposals aiming at the coordination of the research activities in Luxembourg and promotion the participation of Luxembourg in international R&D programmes
- Providing advice on any subjects upon request of the Board

The Board takes, by the 1999 law, all the decisions related to the management of the FNR, including formally the validation of the project proposals.

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2.3.2 Critical issues in the distribution of roles between the actors

Three main issues should be considered for assessing the relationship between the different actors.

The composition of the Scientific Council is challenging because of the presence of the beneficiaries (Universities and CRP)

Historical reasons may explain the participation of representatives of the University and the PROs to the Scientific Council, as stated in the law creating the FNR in 1999. They were probably relevant at the time of the creation of the FNR which introduced a completely new logic in the funding of research activities in Luxembourg, causing certainly some fears on the PROs side.

However after 10 years of functioning, in particular since 2007/2008 with the first performance contract and the implementation of the CORE programme, the FNR is more mature and enters into a consolidation phase.

The current composition of the Scientific Council prevents the FNR selection process to be a completely transparent process as it creates suspicion on the independency and transparency of the selection process as a whole.

It also prevented the FNR secretariat and the PROs to organize an 'institutionalized' dialogue, FNR and PROs stressing that the Scientific Council could be the right place for that dialogue. However, the missions of the Scientific Council and its composition do not address at such a goal.

The respective roles of the Board and the Scientific Council still need clarification or adaptation

The composition of the two bodies has been reviewed in March 2010 with the nomination of the new Presidents, which impulse a new dynamic within the two bodies. The distribution between representatives of the private sector and the public sector at the Board remains unchanged (50%).

The issue does not concern the relationship between the two bodies. There are quite close and trusting relationships between the two organisations. The President of the Scientific Council may attend the Board as observer and report on the Scientific Council discussions. In addition, there is a regular meeting between the President and Vice President of the Board, President of the Scientific Council, and the FNR secretariat for preparing the meeting of the Board ("bureau"). The newly nominated Presidents also organised small talks for discussing about their respective roles and missions.

The major problem concerns until recently (2010) the low level of satisfaction of the members of the two bodies with respect to their practical roles and missions. Members of the Board consider that until recently the Board meetings were too much focused on daily management issues of the FNR, and that they were not in a capacity of providing a real input on the strategy of the FNR and raising strategic issues (such as: what do we want to fund? On which priority sectors? With which objectives and means? What is the real added value of FNR intervention?).

This statement was based on three reasons:
The preparation of the meeting by the FNR secretariat is considered as too bureaucratic: too many documents sent to the members, too many details, an agenda of the meetings including daily management issues which are not in the core mission of the Board.

The monitoring tools for measuring the impacts of the projects both in terms of elevation of the research quality and in terms of socio-economic impacts in Luxembourg are insufficiently developed for providing a clear vision of the concrete results of the projects.

The lack of periodic management reports (excluding the annual activity report) from the FNR staff providing key figures on the advancement of projects and on foresight.

However, progress has been made since March 2010 with the nomination of the new President which impulsed a new dynamic and new management practices. By example, since the last meetings, the FNR, upon request of the Board, prepares a synthetic dashboard providing figures on number of projects, distribution by thematics and public research organisations, commitments and payments, etc.

On the Scientific Council side, members also stressed that their role was too much focused on the consolidation of the advices coming from the remote reviewers and panel meetings, and the control of the respect of selection procedures. They regret that there is little room for discussion, based on the projects analysis, on the coherence of the submitted projects with the FNR strategy (foresight), and on the FNR scientific strategy in itself. This is clear that the composition of the Scientific Council, including representatives from beneficiary institutions, makes difficult such a discussion.

**The lack of a multilateral and institutional dialogue between the FNR and the central administration of the PROs**

The personal relationship between the FNR staff and the PROs staff either at the researchers level or at the central administration level is not an issue. There is a clear consensus on the quality of the personal and informal relationship and the responsiveness of the FNR staff.

However, this relationship remain informal and bilateral, there is no regular meeting between the institutions and formal meetings are only on a bilateral basis. This situation results partly from a different perception of the beneficiaries: for the FNR, the beneficiary and the 'contact point' in the institutions is the researcher (the “applicant”); for the PROs, the beneficiary is the institution (which applies to the calls). In this respect, the communication efforts of the FNR have been much more focused on the individual researchers than on their host institutions. In addition, the FNR and PROs have seen the Scientific Council as a place for multilateral dialogue, whereas the role of this body is completely different.

By consequence, the lack of formal and multilateral dialogue prevented from: organising a true coordination between the different PROs and the FNR; exchanging from institution to institution on strategic issues (scientific policy and priorities) or more operational issues; and from harmonising the positions of the different PROs (the FNR may play one institution against one another).

It also resulted in a lot of misunderstandings between the FNR secretariat and the PROs central administration about different procedural issues, e.g.: the calendar of the calls within the CORE programme, the deadline for the delivery of the interim and final reports (resulting in delays), the understanding of the eligibility rules and the full cost models, the systematic information on the results and motivation of the evaluation process, etc.
It is worth mentioning that the Ministry of Higher Education and Research in 2009, after several complaints from the PROs, organised small talks for discussing and identifying different management and procedural issues, then organised a bilateral talk with the FNR for presenting the results of its discussions with the PROs and for looking for answers from the FNR. Based on the conclusions of the bilateral discussions, the FNR started to implement some of the adaptations proposed by the PROs, proving such a dialogue and exchange was effective, even though the Ministry acted as an “interface”.

In the perspective of a possible change in the composition of the Scientific Council (excluding the representatives of the PROs), the establishment of an inter-institutional dialogue would be much more important. Such a dialogue would be the only channel for the FNR and PROs to exchange and share on issues and problems.

2.4 The effectiveness of the information and communication system

The question of the information and communication system can be divided into the three following aspects:

- Internal information workflows and communication with the Ministry and the Board
- Communication towards the public research organisations and the researchers
- Communication towards the “grand public”: promotion of scientific culture

2.4.1 An effective communication system internally and towards the “owners” of the FNR

Internal communication within the FNR has not been a question for a long time, when the FNR had only 4 staff people. It has become an issue over the last four years, with the high speed growth of the FNR in terms of staff, even if its size still remains small. The implementation of the performance contract and the adaptation of the logical framework approach also requested to better define the internal coordination of the FNR.

It can be assumed that the procedures are now quite effective involving the different staff people through:

- Weekly meetings (team meetings to coordinate department activities and Monday meetings to share the most important information between the SG and all the staff)
- Monthly coordination meetings to coordinate strategic issues and discuss new ideas
- Internal consultation group to discuss strategic issues between the SG and the senior Programme Managers
- And the development of databases and of an information management system

With the Ministry for Higher Education and Research, the implementation of the performance contract facilitates the dialogue, clarifying the respective roles, objectives and means of the actors. The main channels of communication are the presence of the Ministry in the Board, and the various forms of reporting procedures (e.g. annual updates of the advancement of the performance contract), official meetings providing feedback on programme evaluations and mostly informal talks that ensure the effectiveness of the dialogue with the FNR.

With the Board and the Scientific Council, generally speaking, the communication is also effective and well appreciated by the members of the two bodies. The communication with the two boards is more occasional than the one with the Ministry: 5-6 meetings per year and some additional working groups on specific issues (AFR for
instance; working on the future law on R&D). According to the Board members, meetings are always well prepared, relevant information is available.

However, as already mentioned, until recently (March 2010), the preparation of the meeting by the FNR secretariat was considered as too bureaucratic: too many documents sent to the members, too many details, an agenda of the meeting including daily management issues which are not in the core mission of the Board. In addition, remarks arose regarding the utility of these numerous meetings, where the members until recently had the feeling of only “ratifying” decisions that had been taken before by other bodies.

2.4.2 Strong communication efforts towards the beneficiaries, but still needing minor improvements

Strong efforts have been made to communicate important, versatile, technical information to all partners, especially through the website of the FNR.

Generic information is delivered to (potential) beneficiaries and other stakeholders. It mainly aims at raising the awareness on the funding opportunities provided by the FNR. Communication channels are of different types: website, mailing lists, trainings, networking events, brochures and posters, etc. The research environment in Luxembourg is small enough, so that the general activities of the FNR are well known by research actors.

The most important part of the communication regards individual, project-related information between the FNR Programme Managers and the beneficiary during the whole project cycle. Communication means, according to the three major steps of the project cycle, are as follows:

- Launch of the call: information on the website, special training sessions made by the FNR for the researchers (especially the young researchers) on scientific programme management and funding applications, infodays, direct mailing, etc.
- Selection process: funding decision sent to the host institution and scientific evaluation sent to the PI (MARP), quite the same procedure for AFR
- Ongoing projects: daily talks and e-mailing, contact with the institutions for major changes, and after submission and approval of the interim reports, feedback letter on the scientific advancement and the next payment
- Final evaluation: a feedback letter is sent on the evaluation process of the final report and final payment

If the different stakeholders underline the effectiveness of the different communication channels and the responsiveness of the FNR staff to their demand and requests, they also identify minor issues to be dealt with:

- Information stability: information, especially on the website and regarding calls and accountancy rules, often change without previous information, obliging the PROs and beneficiaries to arrange their own monitoring system on the FNR activities to be aware of the latest evolutions
- Information coherence: on specific issues, the information delivered by the Programme Managers are not necessarily the same, resulting in conflicts of interpretation
- Information selection: too much detailed information is produced, causing difficulties for the beneficiaries to get access to the relevant (for them) information. Some useful information is also still missing in a synthetic way, e.g. on the website on the role of the different actors in the selection process at the different stages of the process (e.g.: What is the role of remote reviewers, panels and scientific council? Which people and bodies take the decision? When? In which time frame? How are the remote reviewers selected?).
Finally, as already mentioned, beneficiaries also complained of the feedback provided by the FNR on the evaluation process (see above § 2.1.)

It is worth mentioning that these issues are shared by other national funding agencies in Europe, like DFG and RCN in Norway and Germany. However, in the case of the FNR, it also reflects the need for stabilizing its programmes and procedures (which have been constantly adapted in to better suit the needs of the stakeholders), but also the need for establishing an institutional dialogue with the central administration of the PROs.

2.4.3 The promotion of scientific culture: a great success but requesting strong efforts from the FNR

The promotion of the scientific culture is one of the three strategic objectives of the FNR, in particular towards the youngest people (from 6 to 19 years old).

The PSCOM department of the FNR implements a number of activities for giving a stronger visibility to the FNR and scientific culture

- Organization of the Researchers’ Night
- Creation of “Mister Science” (TV show)
- Campaign “Cherchons chercheurs” (Looking for researchers)
- Partnerships with a newspaper (articles on scientific issues)
- Advertising campaigns
- Phone survey of the public perception of research and science
- Etc.

External communication seems to be very effective: all the stakeholders are perfectly aware of the FNR activities towards the grand public and appreciate the strategy and the activities. The different events have a large audience and are very popular (Researchers’ Night, Mister Science).

However, two related specific issues are worth mentioning regarding the effectiveness of the PSC activities of the FNR:

- It mobilises an important efforts in terms of staff dedicated to the activities (4 FTE on PSCOM, of which 2.5 on PSC)…
- …which could be overcome by a stronger coordination with the public research organisations. The Self Assessment Report stresses that the indicator of the number of projects labelised by the ProScience group (a group of Luxembourg institutes and associations, created in 2007 by an FNR initiative, which coordinates the activities of promotion of scientific culture) will not reach its target5. Of course, the indicator does not take into account the fact that “an event which attracts several thousands of people like the Science Festival needs to be considered differently than an event which attracts 20 people, e.g. a scientist’s visit in a school class”. However, it also shows the ProScience group has not achieved the expected results in terms of coordination of PSC activities, namely the involvement of the public research organisations (CRPs) into the design and organisation of the events, such as the Science Festival and the Researchers’ Night.

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5 50 projects were planned for 2008-2009, only 19 have been implemented by the end of 2009; for the whole period 2008-2010, 90 projects were planned. It is expected that the target will not be achieved by the end of 2010.
2.5 **The effectiveness of the performance contract as a management tool**

2.5.1 The performance contract and the logical framework approach

The performance contract was signed in 2008, after having being negotiated by the FNR and the MHER. It was conceived as a management tool, in which the main objectives of the FNR have been translated into performance indicators (three types of indicators). They correspond to the FNR strategy and its new management scheme, set up through the Logical Framework approach adopted in 2007.

The performance contract is an effective management tool:

With regard to the Ministry:

- It offers to “owners” a more strategic vision of FNR activities and research programmes based on a shared vision of what must be the goals and missions of the FNR.
- It also offers a **stronger visibility and readability** to the Ministries (first of all the MHER) of FNR goals, activities and results. The annual activity report on the implementation of the performance contract presents the main achievements with regard to the performance indicators, on an annual basis. It provides a good basis for identifying potential overlapping and gaps with other agencies and public research organisations.

With regard to the internal management of the FNR:

- It allows to adopt a more structured and relevant approach with a shorter and readable portfolio of programmes: CORE, ATTRACT, PEARL, AM, AFR
- It offers to the FNR secretariat a greater predictability of the financial resources (despite the crisis) for planning the activities and the dedicated means, and it makes easier to build a HR management strategy for attracting new staff and more experienced people with stronger specialisation in specific scientific fields
- It offers flexibility of the financial management with the possibility of shifting budgets from one instrument to another with the approval of the MHER

With regard to the « beneficiaries » (researchers and PROs):

- It helps to ‘sharpen’ the role (primary focus on scientific quality) and the visibility of the FNR on the national research scene

However, the performance contract 2008-2010 still does not embrace the whole missions and activities implemented by the FNR, especially for what regards the contribution of the FNR to the scientific international visibility and attractiveness of Luxembourg for which the FNR developed dedicated programmes and activities (see recommendation 2).

In addition, the performance contract strongly emphasis the objective assigned to the FNR to improve its internal management, which is obviously relevant. However, this is not an objective per se, but a mean for achieving its priority objectives. For the next period, if the FNR should continue to report on the internal management to the Board, it should not be included in the performance contract 2011-2013.

Finally, some of the indicators for measuring the achievement of the objectives were not adequately defined (see below), reflecting that the current performance contract is still a “work in progress”, the first generation of such a management tool.
2.5.2 Indicators: definition and achievements

As already mentioned, Annex 1 to the performance contract 2008-2010 assigns three strategic objectives (OS):

- OS 1: Supporting researchers to build up scientific quality and excellence;
- OS 2: Improving Luxembourg research environment and institutional framework;
- OS 3: Promoting scientific culture, particularly among the general public and the young.

An additional objective regards the improvement of the effectiveness of the internal management and the transparency of its process (M).

Related indicators have been defined for these objectives, divided into three different categories:

- IM : internal management
- DR : Direct results
- IR : Indirect results

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Objective</th>
<th>Indicators 2008-2010</th>
<th>Target 2008-2010</th>
<th>Achievement over the period 2008-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM1</td>
<td>M</td>
<td>Development of new data management system covering the FNR’s funding instruments</td>
<td>Implementation by June 2009 for AFR, by end 2009 for MARP and AM</td>
<td>Full implementation by mid-2010</td>
</tr>
<tr>
<td>IM2</td>
<td>OS1 &amp; OS2</td>
<td>Impact studies</td>
<td>EAU, SECOM, NANO, TRASU, INTER have been evaluated</td>
<td>AFR evaluation is going on</td>
</tr>
<tr>
<td>IM3</td>
<td>M</td>
<td>Reducing the difference between planned and actual payments for each priority action</td>
<td>Difference below 20%</td>
<td>2008: 23% 2009: 21.7%</td>
</tr>
<tr>
<td>IM4</td>
<td>OS2</td>
<td>Time between the submission of full proposals and the communication of selection results for the CORE and ATTRACT programmes</td>
<td>Less than 5 months</td>
<td>CORE: 4 months and 28 days ATTRACT: 3 months</td>
</tr>
<tr>
<td>IM5</td>
<td>OS2</td>
<td>Time between the communication of selection results and the start of the projects</td>
<td>Less than 6 months</td>
<td>CORE: 3.7 months ATTRACT: 5.5 months</td>
</tr>
<tr>
<td>IM6</td>
<td>OS2</td>
<td>Time between the closing of AFR calls and the communication of selection results</td>
<td>Less than 4 months for the PostDocs Less than 2 months for the PhD</td>
<td>PostDoc: 3.95 months PhD: 2.45 months</td>
</tr>
<tr>
<td>IM7</td>
<td>OS2</td>
<td>Signature of a cooperation agreement with Luxinnovation</td>
<td>Signature in 2009</td>
<td>Planned for the end of 2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Objective</th>
<th>Indicators 2008-2010</th>
<th>Target 2008-2010</th>
<th>Achievement over the period 2008-2010</th>
</tr>
</thead>
</table>
Total: 985

| OS3 | DR3: Number of projects carrying for the PROSCIENCE label | 2008: 20  
2009: 30  
2010: 40  
Total: 90 | 9 in 2008  
10 in 2009 |

| OS2 | DR4: Participation in the FP7 FNR involved in ERA-nets |

<table>
<thead>
<tr>
<th>Objective</th>
<th>Indicators 2008-2010</th>
<th>Target 2008-2010</th>
<th>Achievement over the period 2008-2010</th>
</tr>
</thead>
</table>
| OS1 | IR1: Number of scientific publications mentioning the FNR financial support in peer-reviewed journals | 2008: 30  
2009: 50  
2010: 70  
Total: 150 | 2008: 30  
2009: 78 |
| OS1 | IR2: Number of ongoing theses under the AFR scheme or under any project financed by the FNR | 2008: 50  
2009: 150  
2010: 300  
Total: 480 | 65 in 2008  
403 in 2009 |
| OS1 & M | IR3 : Percentage of projects achieving the planned objectives regarding PhD students refereed publications, patents and licenses, and the public information events following the final project evaluation | Superior to 85% | 87.5% of projects achieved their scientific objectives in 2008, 50% in 2009 |

Based on these figures, it can be assumed that most of the objectives have been achieved or will be achieved by the end of 2010 (e.g.: data system implementation, agreement with Luxinnovation).

As already mentioned by the FNR in the Self Assessment Report, “the performance contract and thus the indicators helped with the definition, monitoring, and evaluation of the FNR’s general objectives…[it forced] the FNR to monitor several key indicators reflecting its main objectives.”

However, established in 2008 for the first “performance contract” experience of the FNR, some of the indicators were inadequately defined:

(i) either difficult to measure because the method of measurement was insufficiently precised (e.g.: DR3 on ProScience Label measures the number of projects, instead of measuring the audience to the PSC activities organised by the FNR);

(ii) not really relevant because quantitative indicators based on absolute figures not reflecting the real added value of the FNR intervention and the quality of the activities supported (e.g.: IR 2 on the number of ongoing theses under AFR scheme does not provide information on the quality of the Ph.Ds nor the impact of the grant on career development);

(iii) not giving information by types of programmes and scientific domains (e.g. for what regards the indirect results indicators)

(iv) or not fully reflecting the objectives assigned to the FNR. This is particularly true for measuring the added value of the FNR interventions concerning the international scientific attractiveness of the national research scene (this is one of the direct objectives of ATTRACT and PEARL programmes, and an indirect objective of INTER programme).

Globally speaking, the current set of indicators is mainly output-oriented (measuring the realisation – absolute figures – and results - e.g. publications) and not sufficiently impact-oriented for reflecting the real added value of the FNR interventions and for providing a
general picture of the impact (direct or indirect), especially regarding the improvement of the scientific quality of the research.

It should be noted that the FNR is perfectly aware of this issue, the Self Assessment Report makes some relevant propositions, in particular for what regards the evaluation of the scientific impact of the FNR activities (IR 1) by developing a new software tool CONVERIS for measuring the quality of scientific journals and providing relative figures (e.g.: the total number of FNR funded publications vs. the average cost of a FNR-funded publication).

### 2.6 Conclusion

It comes from the previous analysis that globally the FNR achieved its strategic objective of improving the scientific quality of the national research scene and its excellence, consistently with its core business.

We can resume the main “strengthens” and “weaknesses” of the FNR as follows:

**Main strengths:**

- The FNR contributes to improving the scientific quality of the research projects by developing a selection process that meets globally the international standards in terms of transparency and independency.
- It develops a portfolio of programmes and activities that globally suits the needs of the researchers (whatever the type) and contributes to the international scientific attractiveness of Luxembourg.
- It implements light and flexible research projects’ management procedures that are well appreciated by the researchers.
- It set-up an effective communication system internally and towards the owners and the researchers. The responsiveness of the FNR staff to demands and requests is highly appreciated by the different stakeholders.
- It also really succeeded in promoting the scientific culture in Luxembourg, even though it required strong efforts from the FNR and would need stronger cooperation with the PROs.
- The performance contract 2008-2010 has been an effective management tool by offering a greater visibility of the FNR goals and activities to the owners and researchers, but also by providing for the FNR Secretary a greater predictability of the financial resources. It contributed to the establishment of simple and transparent funding mechanism and some flexibility in the daily management of the fund.

**Main weaknesses:**

- The FNR still experiences difficulty in clearly communicating towards the researchers on the selection process (functioning and feedback on the evaluation results) and the changes into the procedures (stability and coherence of the information) despite the efforts dedicated to the internal coordination within the FNR.
- The lack of a multilateral and institutional dialogue between the FNR and the central administration of the PROs is really challenging, resulting in misunderstandings between the FNR and PROs (e.g. on the timing of the project’s cycle).
- The composition of the Scientific Council is also really challenging with the presence of the beneficiaries institution, which also prevents the establishment of a real dialogue and strategic thinking.
- The respective roles and functioning of the Board and the Scientific Council still need clarification and adaptation, despite the progress made since March 2010.
• In 2008, the performance contract was a first experience, it is still a work in progress that needs to be adapted and refined taking into account the lessons learnt (covering the whole activities and missions of the FNR, adaptation of the list of indicators, etc.).
• The discrepancy between the annual planned and the actual payments requires stronger efforts, from the both side (FNR and PROs), for improving the absorption capacity of the PROs by maintaining the quality threshold.
• The FNR does not address entirely the expectations of the different stakeholders by providing a clear picture (and communicating on) of the impact and added value of the FNR activities.
3  Recommendations

Relying on the previous analysis and the challenges of the FNR to improve its management in the framework of the next performance contract 2011-2013, three levels of recommendations are formulated in terms of:

- Strategy
- Governance
- Operational level

These recommendations have the overall objective of maintaining the continuity of the portfolio of the FNR research programmes and activities, however through streamlining procedures and management for improving the effectiveness and impact of the FNR on the national research scene.

3.1  Recommendations on strategy

R1 - Keep the scientific quality as a key objective and as the key selection criterion

As already mentioned in the analysis of the evaluation key questions, some stakeholders, especially the PROs, raised the question of the better integration of the criteria on the exploitation and valorization of the research results in the appraisal of the projects, and even called for an enlargement of the FNR missions by developing dedicated programmes to support enterprise-research collaborative projects and innovation-related projects.

We assume the scientific quality must remain the key criterion of selection of the research projects (“good science first”), and innovation related criteria must remain secondary, for several reasons:

- Improving the scientific quality of the national research scene and its excellence is the core business of the FNR from its very beginning, on which the whole management process of the FNR is focused and strong efforts have been mobilised in the past years for ensuring the transparency and independency in the selection process. The evaluation analysis proved that FNR has to a large extent succeeded in achieving this objective.
- With only 20% of the Luxembourg research funding in the public sector, the FNR cannot cover the whole innovation chain, but it must remain focused on the research activities that can have the stronger impact on the improvement of the quality of the research and on which it can have direct effects with a high level of professionalism and with a constant number of staff. More applied research activities implemented by the CRPs or University may be funded (and are) through the Ministry’s grants (approx. 60% of their total budget) and other sources of funding (FP7, INTERREG, etc.).
- The ex-ante evaluation of the exploitation and valorisation potential of the research results of a research project are more difficult to carry out than the ex-ante evaluation of its scientific quality.
In addition, the introduction of new types of activities (e.g.: an innovation support programme) in the performance contract needs to be carefully assessed. The FNR has made constant changes in its programmes and procedures (offering flexibility for the beneficiaries and showing its capacity to better suit the needs of its clients), but now, entering into a maturation phase, PROs and researchers need a stabilization of the programmes and procedures.

However, the question of establishing closer links between research activities and economic activities is a legitimate issue both for the CRPs (applied research) and for the policy makers in a context in which innovation is very high on the policy agenda. As a consequence, it could be envisaged to:

- Pay more attention in the selection of panel members to the participation of experts with an industry profile.
- Give to researchers a space in the application forms for CORE programmes for developing the interest of the project with regard to the Luxembourg economic fabric and the potential effects (without changing the selection criteria).
- Explore the ways of addressing existing gaps in the research and innovation system, e.g. through the implementation of a pilot scheme for supporting proof of concept activities allowing already funded research projects with interesting results for exploring further development. Such a pilot programme should however be built in close collaboration both with the PROs and Luxinnovation, but also with the external expertise from research institutions already implementing this type of activities. A feasibility study could be envisaged for exploring the conditions for setting-up a “proof of concept” or a “technology maturation” fund and the partners to mobilise for providing technical assistance.

R2 – Explicitly include in the performance contract a strategic objective of contributing to the international visibility and attractiveness of Luxembourg

This recommendation does not aim to create a new mission and assign a new objective to the FNR.

From our analysis, it is clear that in the past few years, the FNR has developed strong efforts, with the support of the Ministry and the Board, to raise the international visibility of the Luxembourg research system and promote the scientific attractiveness of Luxembourg. The signature of a number of partnerships within the INTER programme with national research agencies (aiming at launching joint research calls), the use of the European Cofund scheme (e.g. for Marie Curie Actions - FP7-People-CoFund) and the implementation of the new ATTRACT and PEARL programmes clearly reflect this orientation.

However, this orientation is not clearly taken into account in the current performance contract. The three current strategic objectives do not explicitly mention the enhancement of the international visibility and scientific attractiveness, and accordingly no indicator (management, direct and indirect) is measuring the achievement of these activities.

We assume that the new performance contract should acknowledge this orientation as a fourth strategic objective of the FNR as it is complementary with the three first strategic objectives and coherent with the concrete activities implemented by the FNR, in a small

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country as Luxembourg. It would be coherent with the strategy of the FNR to refocus the Accompanying Measures on national and international visibility (see hereafter). The integration of this fourth objective would also mean developing one or two related indicators for measuring the results and impacts of the FNR activities (e.g.: number of projects supported under ATTRACT and PEARL, number of foreign researchers attracted in Luxembourg, participation of Luxembourg to joint research calls within the INTER programme). The concretization of this orientation in the performance contract would also contribute to the enhancement of the participation of the PROs to PEARL and ATTRACT.

### 3.2 Recommendations on gouvernance

**R3 – Clarify the distribution of roles between the Scientific Council and the Board**

A first recommendation concerns the change in the composition of the Scientific Council by excluding representatives of the beneficiaries which creates suspicion. It would prevent potential conflict of interests. It should be noted that this point is under discussion within the framework of the preparation of the future law on R&D in 2011. Within this perspective, it could be also relevant to precise which affiliations are incompatible with the status of member of the Scientific Council.

The Ministry should also take the opportunity of the future law to set a clear distribution of tasks and duties between the Board, the Scientific Council and the FNR secretariat, based on the complementarities of the tasks, avoiding duplication and establishing clear responsibilities (“people need to know what we are responsible for”). This should be done in close collaboration with the Board and Scientific Council.

Basically, the distribution of the responsibilities should be based on the following principles:

- The Board is in charge of discussing and adopting the strategy (where to put the money?) and the control of the money spending, i.e. control of the financial efficiency and effectiveness of the FNR management with regard to the performance contract indicators; and control of the impact and added value of the FNR activities.

- The Scientific Council is in charge of:
  - Ensuring that the whole evaluation process of the research projects is effectively meeting international standards in terms of transparency and independancy
  - Controlling the consistency of the research projects positively evaluated by the remote reviewers and panel members with the scientific strategy of the FNR
  - Discussing and formulating to the Board suggestions for improving an adapting the FNR instruments and procedures, e.g.: proposals of new programmes, new theamics, or reform of existing programmes (e.g.: on AFR grant scheme ; introduction of multidisciplinary research programmes, etc.)

- The FNR Secretariat is in charge of the daily management of the FNR. The enhancement of the strategic role of the Board and Scientific Council also requests from the Secretariat to focus the preparation of the Board and Scientific Council meetings on strategic issues by providing relevant information on the advancement of expenses, concrete results of...

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7 The FNR defined the circumstances in which a conflict of interest may exist for the persons involved in the remote reviews (remote reviewers and panel members). See Document on CORE Peer Review on the FNR website. A same type document could be established for members of the Scientific Council.
FNR activities, analysis of main weaknesses of the FNR instruments, etc.; allowing the members of the two bodies to discuss and decide with a good knowledge of the issues.

The coordination between the two bodies and the FNR Secretariat should also be improved by organising more regular meetings of the “bureau” (President and Vice President of the Board, President of the Scientific Council and General Secretary of the FNR), at least on a basis of two meetings a year.

Last but not least, the Ministry should encourage the FNR to clearly communicate on the role of the Scientific Council in the evaluation process (a short presentation of the Scientific Council in the Guidelines for Applicant would be needed), thus giving it more legitimacy and enhancing its understandability by the PROs and the researchers.

R4 – Establishing an institutionalised platform of dialogue between the FNR Secretariat and the PROs

As already mentioned in the analysis of the evaluation key questions, the lack of a formal and multilateral dialogue between the Secretariat and the PROs resulted in a number of misunderstandings on several procedural issues, but also to some extent in a lack of coordination, as reflected in the poor results of the ProScience group (in terms of number of projects with a label). Generally speaking, there is a lack of trust between the institutions.

Therefore, we recommend the establishment of a formal platform of dialogue between the institutions allowing for talking and exchanging from institution to institution (not only in a bilateral way and informally). Such a dialogue, which exists in other national research agencies like DFG and RCN, could be organised by the FNR on an annual basis, through a meeting involving the Secretariat, the PROs and University, dealing with:

(i) Procedural issues, programme by programme:
   - Evaluation process: issues and changes suggested
   - Eligibility rules: issues and changes suggested
   - Communication and information management: issues and changes suggested
   - Reporting (interim and final): issues and changes suggested
   - Timing: issues and changes suggested

(ii) Adaptation of the programmes to the needs of the beneficiaries and possible introduction of new programmes and/or collaborative projects between the institutions.

The establishment of an institutional dialogue between the FNR and the public research organisations does not prevent from maintaining a permanent dialogue at operational level between the Programme Managers of the FNR, the central administration of the public research organisations, and the researchers.

The mention of the necessity to establish such an institutional dialogue should be included in the next performance contract of the FNR, but also in those of the public research organisations.
3.3 Operational recommendations

R5 – Improve the understandability of the selection process by the beneficiaries

As already mentioned, the FNR made strong efforts for setting-up a selection process meeting international standards and ensuring the transparency and independency of the projects selection.

We assume there is less a question of lack of transparency of the selection process in itself than a question of visibility and “understandability” of the process leading to the final decision, therefore a question of communication towards the beneficiaries (PROs and researchers).

We recommend making small adaptations that would not require strong efforts and costs, but could considerably improve the acceptability of the selection process by the researchers and their host organizations:

- Explain clearly in the Guidelines of Applicants for each programme how the selection process works: the role of the remote reviewers, the panel members and the Scientific Council, giving a clear presentation of their role at each stage of the process in a synthetic way
- Communicate on how the selection of the remote reviewers and panel members is implemented by the FNR Secretariat (criteria, methodology, evaluation of the evaluators process)
- Give the possibility, in the application forms, to the applicants to name individual reviewers that they want to exclude from the process (with justified reasons). This would not mean that the FNR will have to systematically follow the position of the applicants, but it will check the integrity and absence of conflict of interest of the remote reviewers with regard to the applicants. Such a possibility should lead to the publication of the list of remote reviewers and panel members (for each call) once the selection process is completed.
- Provide more detailed motivation, in case of MARP the programme, on the potential discrepancy between the requested budget and the budget accepted by the FNR.

R6 – Simplify the management of the programmes

The recommendations cover three aspects.

The AFR Grant Scheme: the selection process for the AFR grant scheme is too heavy and misbalanced

- with regard to the budget of each grant, especially for what regards the Ph.D; mobilising a lot of efforts with counterproductive effects (time for decision)
- with regard to the philosophy of the current scheme (mass vs. ‘class’ instrument): the AFR currently supports 500 Ph.D out of approx. 1000 researchers in Luxembourg, even if among the 500, there are foreigners in Luxembourg and outside Luxembourg, and Luxembourgish outside Luxembourg.
The AFR Grant Scheme is currently under evaluation, which should lead to some adaptations. However, based on our analysis, we recommend:

- to put a stronger focus on the quality of the environment offered to the Ph.D (and Postdoc)
  - through promoting strongly the integration of Ph.D funding within research projects (CORE, ATTRACT, PEARL), and also Ph.D within enterprises
  - through support to training and skills development programmes targeting Ph.D
- in consequence, the adaptation of the selection process for improving the efficiency of the management.
  - We agree with the FNR proposal to put the emphasis, in the selection process, on the quality of the Ph.D supervision (scientific quality of supervisor, experience in managing Ph.D candidates) and training of the Ph.D, and less on the research project itself. As stated by the FNR in the Self Assessment Report, "this should also allow to reduce the time and effort currently invested in the evaluation of PhD proposals"
  - In addition, it should be envisaged to simplify the two-stage selection process by skipping off the panel meetings, and maintaining only the two remote reviews. It would shorten the delay of the selection process and lighten the management process.

**Accompanying Measures:** we take note that the FNR decided with the approval of the Board to close some of them - AM5a: support to platforms, AM5b: support to data access and AM6: support to the preparation of EU projects -, due to lack of applications and budgetary reasons. The FNR wants to refocus its AM on national and international visibility (scientific conference organisation and/or participation to, publications), training and mobility and promotion of scientific culture, priority areas on which the AMs are the most successful (in terms of number of applications – 500 to 600 each year). It should lead to a reduction of administrative efforts for managing the scheme.

However, to the extent to which most of the AMs applications are linked to AFR grants, we recommend to envisage to offer to Ph.D and Postdoc a “package” including automatically with the salary grant additional grants for the participation to one conference abroad each year, for the participation to one or two training sessions each year (e.g.: summer schools), and for the publication of the Ph.D hesis. This procedure would certainly lighten the administrative management of the scheme; the control of the scientific quality of the conferences and training sessions would rely on the approval of the supervisor of the Ph.Ds and director of research labs (Postdoc), consistently with the above recommendation on the AFR Grant Scheme (emphasis on the quality of the supervision).

**The timing of the funding cycle:** one of the first issue on the agenda of the platform of dialogue which we recommend to set-up between the FNR Secretariat and the PROs, should be the adaptation of the timing of the funding cycle to better suit the needs of the PROs and researchers and to reach a consensus on:

- Adaptation of the reporting deadline, after the closure of the annual budget of the PROs, for avoiding delays (April or May)
- Adaptation of the timing of the calls to the academic calendar:
  - For CORE programme: the publication of results in July or September at the latest instead of October
  - For AFR: a call in March for a response in July, and a call in September for a response in December

This would foster the recruitment of researchers and allow the host institutions to anticipate the funding received in the calculation of their annual budget (prepared in September/October).
R7 – Provide a clearer picture of the added value and impact of the FNR activities and communicating on them

The experience of the other national agencies (DFG, RCN) suggests that providing a clear vision of the impact of the research projects is a difficult task that needs not to be over ambitious.

For some programmes it is also too early for assessing their impact (e.g. AFR grant scheme impact in terms of career development). In addition, the FNR is already carrying out external evaluations of its former programmes (e.g.: EAU, TRASU, etc.) and plans to evaluate the new CORE programmes by 2011/2012. Last but not least, the FNR is perfectly aware of the need to strengthen monitoring tools of the impact of its research projects, with the on-going development of bibliometric monitoring tools (CONVERIS software) for measuring the impact of the FNR on scientific publications.

However, until now, there has been no systematic exploitation of the concrete results of the final evaluations of the research projects funded under the MARP programmes and under the AFR grant scheme, for presenting to the Board and Scientific Council and communicating to a larger public on the impact of the research activities, in particular concerning the following items:

- Concrete results of the research projects in terms of knowledge and potential innovation
- Impact of the research activities in the light of the socio-economic context of Luxembourg (added value)
- Impact of the research activities in terms of visibility and attractiveness of the national research scene
- Impact of the research activities in terms of career development for the researchers

Therefore, we recommend to the FNR to consolidate systematically the concrete results and impacts of the research projects and communicate on them. There is a need to shift progressively from output-oriented indicators to impact-oriented indicators. However, indicators must be focused on measuring what the FNR can influence either directly or indirectly without being over-ambitious, as already stated. Whereas indicators related to the success rate of the proposals are not relevant (decreasing the success rate is not an objective of the FNR per se), indicators related to the qualification of publications (articles in international publications with peer review committees, number of quotations of the articles in international publications, etc.) and to the capacity of Luxembourg to attract scientific high profiles (PEARL, ATTRACT) are to be considered. This would address the expectations of the Ministry, the Governance bodies (Board and Scientific Council), and also the research community.

This could be done through different means:

- Redirecting the set of indicators of the performance contract towards impact-oriented indicators and relative indicators reflecting more the added value of the FNR activities and the distribution by scientific domains, e.g.:
  - Number of publications and scientific quality of the publications (quality of the scientific journal and citation index)
  - Quality of the Ph.D theses and impact of the AFR Grants on career development
  - number of foreign researchers attracted in Luxembourg (especially through ATTRACT and PEARL), participation of Luxembourg to joint research calls within the INTER programme, number of Ph.D theses co-supervised by a Luxembourg PRO with a foreign PRO
- Implementing training sessions on how to draft good interim and final reports, improving the capacity of the researchers to communicate on the results and impacts
of their projects targeting a larger audience (contribution to scientific culture, contribution to the Luxembourg industry, and contribution to social well being).

- Creating a scientific prize to be awarded to outstanding research works interesting the Luxembourg economy and/or society
### List of interviews

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<tr>
<td>ELSEN</td>
<td>Yves</td>
<td>CEO Hitec Luxembourg S.A.</td>
<td>President of the Board</td>
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<td>SOLVI</td>
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<td>KERGER</td>
<td>Robert</td>
<td>Ministry of Higher Education and Research</td>
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<td>HAENESL</td>
<td>Jean</td>
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<td>MEYER</td>
<td>François</td>
<td>Former director Centelion SAS and R&amp;D Aventis France</td>
<td>President of the Scientific Council</td>
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<td>BLESSING</td>
<td>Lucienne</td>
<td>University of Luxembourg</td>
<td>Vice-rectrice à la recherche Member of the Scientific Council</td>
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<td>Chairman of the Labour Market Panel (CORE) and Rapporteur of the VIVRE Programme</td>
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<td>OLHER</td>
<td>Fritz</td>
<td>Technopolis Group Austria</td>
<td>Evaluation expert of FNR programmes</td>
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<td>Research facilitator</td>
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<td>KOFF</td>
<td>Harlan</td>
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<td>Responsable, sciences politiques</td>
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<td>ELDMAIR</td>
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<td>MORGA</td>
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<td>DEVAUX</td>
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<td>VALLAR</td>
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### Participants to the 2nd workshop

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<td>François Meyer</td>
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<td>Gro Helgesen</td>
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<td>Pierre Decker</td>
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<tr>
<td>Léon Diederich</td>
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<td>Robert Kerger</td>
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<td>Raymond Bausch</td>
<td>Secretary General of the FNR ff</td>
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<td>Marc Schiltz</td>
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<td>Frank Bingen</td>
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<td>Ulrike Kohl</td>
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<tr>
<td>Carlo Duprel</td>
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<td>Christiane Kael</td>
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<tr>
<td>Matthieu Lacave</td>
<td>Senior consultant, ITD-Eu</td>
</tr>
<tr>
<td>Michel Lacave</td>
<td>Senior consultant, ITD-Eu</td>
</tr>
</tbody>
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## Annex 2 – List of acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AFR</td>
<td>Allocation formation recherche (Training and research grant)</td>
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<tr>
<td>AM</td>
<td>Accompanying measures</td>
</tr>
<tr>
<td>BFR</td>
<td>Bourse formation recherche (training and research stipend)</td>
</tr>
<tr>
<td>CRP</td>
<td>Centre de Recherche Public (Public research centre)</td>
</tr>
<tr>
<td>DFG</td>
<td>Deutsche Forschungsgemeinschaft (German Council for Research)</td>
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<tr>
<td>FNR</td>
<td>Fonds National de la Recherche (National Research Fund)</td>
</tr>
<tr>
<td>MARP</td>
<td>Multiannual research programmes</td>
</tr>
<tr>
<td>MHER</td>
<td>Ministry for Higher Education and Research</td>
</tr>
<tr>
<td>OS</td>
<td>Objectif stratégique du FNR (Strategic Objective of the FNR)</td>
</tr>
<tr>
<td>PRO</td>
<td>Public Research Organisation</td>
</tr>
<tr>
<td>PSCOM</td>
<td>Promotion of Scientific Culture and Communication</td>
</tr>
<tr>
<td>PSC</td>
<td>Promotion of Scientific Culture</td>
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<tr>
<td>RCN</td>
<td>Research Council of Norway</td>
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<tr>
<td>UL</td>
<td>University of Luxembourg</td>
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