

Evaluation of the Accompanying Measures of the FNR For the Development of a Strategy

Final Report
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1. Executive Summary

The Accompanying Measures (AM) are the most frequented funding scheme of the FNR, with 1,524 applications and 1,151 funded activities during our evaluation period from January 1st, 2007 to December 31st, 2010.

The subject of this evaluation are the AMs currently offered by the FNR. There are 4 major Accompanying Measures: AM1 “Promotion of Scientific Culture”, AM2 “Training and Mobility”, AM3 “Organisation of Scientific Conferences in Luxembourg” and AM4 “Scientific Publications”. AM2 “Training and Mobility” is further subdivided and offers a diversified portfolio of sub-programmes: AM2a “Active participation in conferences abroad”; AM2b “Organisation of trainings for researchers in Luxembourg”, AM2b “Training of Researchers abroad” and AM2c “IN mobility of researchers” as well as AM2c “OUT mobility of researchers”, adding up, in total, to 8 funding programmes

During the initial phase of the Luxembourg research and innovation system, AMs were originally created to complete the FNR “tool box” to ‘create a friendly environment’ and to improve the conditions for carrying out research activities. Meanwhile the research and innovation system in Luxembourg has grown and developed and the focus of the FNR has shifted towards developing a competitive national research system and ensuring scientific quality.

As determined in the FNR performance contract with the Government of Luxembourg for 2011 – 2013, before this evaluation was carried out no systemic analysis of the AMs had been conducted to provide a clearer picture of their objectives and added values to elaborate recommendations for possible improvements and to lay the groundwork for the elaboration of suitable indicators of their impact. This is also seen in the light of the impact study of the FNR that will be conducted by the Ministry for Higher Education and Research in 2014.

Based on the results of interviews with representatives of the public research organisations, surveys with the applicants and beneficiaries and numerous discussions with FNR staff, we provide a picture of the objectives and added values of the AMs. AM1, AM2c and AM3 were identified as measures with the highest impact and potential to fulfil key objectives of the FNR.

Based on our analyses we provide a list of identified indicators to assess the impact of AMs on the national research system against the backdrop of the FNR’s mission.

AMs address central issues of research and the research community. Compared to other funding schemes of the FNR AMs account for a relatively small budget, yet create a high workload for FNR staff, applicants and beneficiaries. To ease the burden and to provide more flexibility, as of January 1st, 2011 the FNR excluded beneficiaries of their PhD/Postdoc Programme (AFR) from applying for funding under the measures AM2a and AM2b. They are now provided with lump sums to cover participation in conferences abroad and training courses. This certainly lightened the administrative load for managing the scheme to some extent, although it still left over 80% of all applications to the AM funding scheme with an average success rate of 84%, raising the suspicion that scientific quality might not have been the key criterion for selection.

In the light of the FNR evaluation conducted in 2010, further allocations are necessary to ensure scientific quality and to simplify the AM scheme to reduce time and effort for applicants, beneficiaries and the FNR.

Against the background of these challenges for the FNR to ensure scientific quality and to simplify their funding programmes, we have made 6 major recommendations on the basis of our analysis:

Major recommendations:

- 1. Reorganise the AM funding scheme;**
- 2. Avoid inhomogeneities;**
- 3. Ensure and increase the quality of funded activities;**
- 4. Increase the comprehensibility of guidelines, selection and evaluation criteria.**
- 5. Use appropriate communication strategies;**
- 6. Include and integrate the following aspects to adapt the AM funding scheme to international trends and standards**
 - **Open for exchange between the academic and private sector (AM3, AM1, AM2c);**
 - **Increase efforts to support dialogue between research communities and the general public (AM1);**
 - **Support the compatibility of family and profession (AM2a, AM2b, AM2c).**

1. Reorganise the AM funding scheme

To abolish redundancies with other funding tools of the FNR portfolio, the AM funding scheme should be reorganized and simplified. We recommend strengthening the measures AM1, “Promotion of Scientific Culture”, AM2c, IN and OUT mobility and AM3, “Organisation of Scientific Conferences in Luxembourg”, paying attention to ensure quality rather than quantity. These measures clearly do have the highest impact of the funding tools of the AM scheme in terms of increasing national and international visibility and networking (strengthening existing collaboration, establishing new collaboration). They contribute to the attractiveness of the research system and the comprehensibility of research for researchers as well as for the general public and increase interest in research. Finally, for AM2c and AM3, they also act as a seal of quality. We also recommend reconsidering the budget for AM1 and AM3. Both measures are managed as co-funding models, with average cost coverage rates of 26.4% (AM3) and 31.3% (AM1). These proportions of the FNR funding budget should be increased by expansion of eligibility of costs, e.g., to lecture fees for speakers.

In addition the focus of AM4, scientific publications, should be focused on monographs, while funding for journal publications and PhD theses should completely merge into the project context of the FNR funding programmes Core, Inter, Pearl and Attract.

AM2a, participation in conferences abroad and AM2b, training courses for young researchers abroad should also merge into the project context of these programmes. To ease the administrative burden for applicants and the FNR as well as to increase flexibility within the project context, PhD students and young researchers up to 4 years after receiving their doctorate who participate in FNR-funded projects, should be granted lump sums, similar to AFR beneficiaries, for participation in conferences abroad, trainings and publications.

AM2b, “Organisation of Training Courses for Researchers in Luxembourg” should be allocated to the strengthened measure AM3 Organisation of Conferences in Luxembourg). However the FNR should keep in mind to allocate this measure in long term into the structured doctoral education in Luxembourg, once it has been established.

AM1, ‘Promotion of Scientific Culture’, should merge with the initiative ‘Promotion of Scientific Culture’, to ease navigation by interested applicants through the FNR’s funding portfolio. We do not refer to the budgets for both programmes, which are a matter for internal management by the FNR. As mentioned in the analyses, it is not immediately comprehensible to applicants that there are two schemes with identical titles, AM1, which refers to funding applications submitted to the FNR to support activities performed solely by the applicants, and ‘Promotion of Scientific Culture’, an initiative in which the FNR actively pursues such activities either by itself or together with other stakeholders.

2. **Avoid inhomogeneities**

To avoid unequal treatment of beneficiaries, we recommend to standardize eligible expenditures and the lump sums provided under all of the funding programmes (e.g., at present, the FNR grants lump sums for conference participation within AMs of €2,000 per person p.a.; Pearl: €1,500 per person p.a. and AFR: €2,000 per person p.a.).

If lump sums are provided, they should be consistent in terms of cost recovery. In AM2a, AM2b and AM4 the FNR grants a lump sum of €2,000 upon application for AM2a (active participation in scientific conferences abroad) and AM2b (training of researcher) and €4,000 for AM4 (scientific publications incl. PhD theses) publications. Upper limit for cost coverage under these measures is the lump sum provided, resulting in inhomogeneities and unequal treatment of the beneficiaries, if the actual costs of an activity exceed the lump sum provided. By complete allocation of AM2a, AM2b and AM4 (journal articles and PhD theses) to projects under the FNR programmes Core, Inter, Pearl, Attract, such inhomogeneities will be reduced as the lump sums granted can be used much more flexibly by the researchers within the budgetary flexibility for FNR-funded projects.

For AM4, we recommend to diversify between costs for conference proceedings, articles in journals, PhD theses and monographs. Here funding for articles in journals and PhD theses should be merged, based upon lump sum agreements in the project context, conference proceedings and monographs, however, should be treated separately. The current uniform lump sum of €4,000 for these activities is at cutting edge for monographs and conference proceedings (we determined the median cost of conference proceedings to be €4,000, for monographs in average the FNR provided €3,900 to these costs, that vary tremendously in amount, exceeding the provided lump sum by far). These lump sums thus require reconsideration by the FNR. However due to high cost variations in both categories, lump sums are not considered suitable, except when integrated into co-funding models.

3. **Ensure and increase the quality of funded activities.**

The scientific quality of AM2a, participation in conferences abroad, AM2b, training of young researchers abroad, and publication of journal articles and PhD theses cannot be evaluated outside the project context in which they take place. By the allocation of all of these AM2a, AM2b and AM4 activities to the context of externally evaluated projects a basic level of scientific quality will be guaranteed and further promoted by their

interdependence upon the approval of the supervisor, in the case of Ph.Ds, and director of research labs, in the case of Postdocs.

The situation is similar for AM4, the publication of conference proceedings. Their scientific quality cannot be rated without considering the quality of the conference itself. By allocation of this AM4 activity to AM3, a basic level of scientific quality has already been assured by the evaluation of the scientific quality of the conference itself.

To ensure scientific quality as the key objective for AM4, the publication of monographs, we recommend the introduction of an obligatory external evaluation procedure, if the application is not integrated into project context.

4. Increase the comprehensibility of guidelines, selection and evaluation criteria.

From our analyses it is clear that a high degree of uncertainty amongst applicants and beneficiaries of the AM funding scheme results from misunderstandings concerning eligibility and selection criteria rather than from a lack of understanding of the underlying funding procedures. Reworking all of the guidelines and forms for all of the AMs should be a prime goal for the FNR in the near future, with clear rules for eligible costs and reimbursements.

As stated below in detail for each AM, when appropriate, we also suggest altering some of the selection and eligibility criteria to increase the quality and suitability of selection.

To further ease navigation through the FNR's funding tools, we recommend reconsidering and changing the headings 'Accompanying Measures' and 'Promotion of Scientific Culture' to more penetrating terms.

5. Use appropriate communication strategies.

Though FNR staff are rated as extremely helpful and professional by all stakeholders, the steady growth of the research and research-interested community has led to changing preferences and needs in terms of communication. While only a couple of years ago information passed on by word-of-mouth and personal contacts predominated, the demand for written information has grown. Revision of guidelines and forms for the AM funding scheme should therefore also include the addition of all applicable rules.

In addition to this, the FNR's communication concepts should be adapted to suit cultural differences that we determined in the process of our analyses. Preference should be given to written information for research-driven applicants, whereas preference should be given to verbal communication and personal contact for the more research-interested applicants to the AM1 scheme. For research institutions, we recommend communicating via the institutions' established communication structures, although for universities communication should be by direct contact with researchers, applicants and beneficiaries.

6. Include and integrate the following aspects to adapt the AM funding scheme to international trends and standards

We recommend opening AM2c, IN and OUT mobility, up to include exchange between the private and academic sector, to increase the socio-economic value of this measure. To close the gap between research and private sector various models exist, which are most

successful when aimed at the transfer of knowledge and technology by persons¹. Such a funding tool would supplement the current national funding tool ‘secondment’ of the Ministry of Economy and Foreign Trade, managed by Luxinnovations on the international scale and would follow general developments within the European research communities.

Luxembourg is a small country with limited resources for research, when compared globally. Exploitation and valorisation of research results is therefore imperative for its research and innovation system. ‘From research to innovation’ is the leading principle for the development of the European research system, implemented in the 8th Framework Programme of the European Union, Horizon 2020 - ‘The Framework Programme for Research and Innovation’, which is going to replace FRP7 on January 1st, 2013². These principles also have to be implemented in the national context of the European research systems³. In Germany the national research funding organisation DFG has therefore established a separate funding programme, called ‘Transfer Projects’ to verify the results of basic research and to provide a framework for joint research by scientists and external partners such as industry, associations and public institutions. In addition to this, they have included such transfer options in their highly prestigious Emmy Noether programme for the promotion of excellent young scientists and into funding of temporary principle investigators, allowing exchanges and transfer of projects from the academic to the private sector, with a focus on national exchanges, albeit with openings to a global level, when expertise is only available abroad. In Norway, the national funding organisation RCN includes companies in general into their funding schemes, be it for national or international exchange. They use guidelines for the amount of public R&D support that may be provided to companies as set out by the EEA Agreement. In accordance with these guidelines, the funding allocated by the Research Council will normally be in the range of 25 - 50 per cent of the total project costs, with an additional bonus of 10% for small and medium-sized enterprises.

The FNR should also bear aspects to support the transfer of knowledge and technology between the academic & private sector in mind for AM1 and AM3. To establish a culture of patronage, a culture that is still missing in Luxembourg, the FNR should reconsider actively inviting private partners to participate in AM1 and AM3 activities.

Dialogue between the scientific community and society is an inherent obligation of national funding organisations and has been fostered by research funding organisations around the world. It has even led to strong and internationally recognised initiatives like ‘Science in Dialogue’⁴, an initiative supported by the DFG and other major funding institutions of Germany. In the light of these international trends, we recommend increasing efforts to support the dialogue between the research community and the general public. This also includes the awareness of representatives of the PROs for the need to involve and inform the general public on developments in research and innovation. In this

¹ Technologietransfer: Ideen Perspektive geben, Sammelband Forschung, 2011, Hrsg. Britta Krahn, Dr. Christian Rietz, Dr. Wilma Simoleit

² Commission staff working paper impact assessment, final, 30.1.2011 of the European commission, accompanying the communication from the commission ‘Horizon2020’ – The framework programme for research and innovation’

Edler, J.; Fier, H.; Grimpe, C.: International Scientist Mobility and the Locus of Technology Transfer. ZEW Discussion Paper No. 08-082, Mannheim 2008.

³ Recommendations of the Wissenschaftsrat on German Science Policy in the European Research area; Bundesministerium für Bildung und Forschung (BMBF): Bundesbericht Forschung und Innovation 2008, Bonn; Berlin 2008 [= BMBF (2008b)]

context we suggest that the FNR should discuss possibilities for funding personnel at public research institutions to promote the initiation and pursuance of AM1 activities.

Supporting the compatibility of family and profession has only come into the focus of national funding organisations such as the FWO (Belgium) recently and had been a desideratum, identified and provided, in particular, for single women, by foundations like L'Oréal International and the L'Oréal UNESCO initiative (France). We recommend the inclusion of e.g. the costs for child care as eligible costs for participation in conferences or training courses abroad (AM2a, AM2c) and to cover the costs for accompanying family members for all researchers with young children for AM2c.

Recommendations for each AM in brief

AM1 Promotion of Scientific Culture

Merge with 'Promotion of Scientific Culture' and strengthen as a funding tool

Amount of funding

- Current average percentage of costs covered: 31%. Increase percentage of costs covered to encourage applications, while still keeping an eye on quality, however.

Eligible costs

- Include appropriate lecture fees for external speakers.

Eligible applicants: Leave as is

Selection criteria: Leave as is

Additional recommendations

- To initiate more AM1 projects, offer a separate funding tool to fund personnel to support and initiate AM1 projects
- Activate private sector to participate in AM1 events to start patronage schemes
- Change heading 'Promotion of Scientific Culture' and 'Accompanying Measures' to further ease navigation through the FNR's funding portfolio

AM2a Participation in conferences abroad

Allocate to the project context

Amount of funding

- No upper limit on lump sum if AM2a stays as separate funding tool
- Sufficient cost coverage by current lump sum of €2,000 (median cost: €1,244)

Eligible costs: Leave as is

Eligible beneficiaries

- Young researchers up to 4 years after completing their doctorate and PhD students working on an FNR-funded project: Lump sum (similar to lump sum granted to AFR beneficiaries)
- All others: Upon application in the context of FNR-funded projects: Similar lump sum to that detailed above

Cost coverage

Based on invoice within the flexibility rules for project management

Selection criteria:

- Change 'Scientific quality of the conference and of the participant's contribution' into 'Scientific relevance of the conference and of the participant's contribution'
- Dismiss: Scientific interest for Luxembourg

Additional recommendation

- Include child care costs as eligible costs to support the compatibility of profession and family

AM2b Training of researchers abroad

Allocate to the project context

Amount of funding

- No upper limit on lump sum if AM2b stays as separate funding tool
- Sufficient cost coverage by current lump sum of €2,000 (median cost: €1,181)

Eligible costs: Leave as is

Eligible beneficiaries

- Young researchers up to 4 years after completing their doctorate and PhD students working on an FNR-funded project: Lump sum (similar to lump sum granted to AFR beneficiaries)
- All others: Upon application in the context of FNR-funded projects: Similar lump sum to that detailed above

Cost coverage

- Based on invoice within the flexibility rules for project management

Selection criteria

- For funding in the project context change ‘Contribution of the training to the career advancement of the applicant’ to ‘Contribution of the training to the project advancement’

Additional recommendation

- Include child care costs as eligible costs to support the compatibility of profession and family

AM2b Summer schools

Integrate into structured doctoral education in the future

Amount of funding

- Sufficient cost coverage with €2,000 for participation in summer schools (median cost: €1,181)

Eligible costs

- Clarify whether the FNR wants to support participation in summer schools or the organisation of summer schools. We recommend funding the organisation of summer schools as a funding tool with high potential. However, in the long term this measure should be integrated into the structured doctoral education

Cost coverage

For participation in summer schools:

- Based on invoice within the flexibility rules for project management

For the organisation of summer schools:

- Similar regulations as for AM3.

Eligible applicants

For participation in summer schools:

- Young researchers up to 4 years after completing their doctorate and PhD students working on an FNR-funded project: Lump sum (similar to lump sum granted to AFR beneficiaries)

For the organisation of summer schools:

- Leave as is
- Registration fees obligatory

Selection criteria:

For participation in summer schools:

Change ‘Contribution of the training to the career advancement of the applicant’ to ‘Contribution of the training to the career advancement of the participants’

AM2c IN and OUT Mobility of Researchers

Strengthen measure as a funding tool

To develop the potential of this funding tool further, AM2c should be redefined to attract more senior researchers from all fields of science. To attract distinguished researchers with an own research profile, the programme should leave as much room for flexibility as possible in terms of interruptions in the research stay as well as regarding the type of activities planned, also to allow besides the conduct of high quality research the inclusion e.g. of teaching activities, when appropriate.

Amount of funding

- Dependent on salary of visiting scientist

Funding duration

- Up to 1 year, with the possibility to divide the stay, depending on funding duration

Eligible costs

Include costs for accompanying family members, child care, etc., as eligible costs to support the compatibility of profession and family and point this option out explicitly.

Eligible applicants

- Researchers with a defined research profile (doctorate or similar achievements) and at least 5 years of research experience
- No restrictions on the length of time a visiting scientist has to have worked at his 'original establishment' prior to the application

Selection procedure and criteria

- No application deadlines
- Change 'Scientific interest & scientific quality-of the project (incl. work plan)' to 'scientific relevance of the project (incl. work plan)'.
- Include 'quality of host institution and host group' for OUT mobility

Additional recommendations

- Integrate aspects to support the transfer of knowledge and technology between the academic & private sector. Include eligibility of exchange between academia and the private sector.

AM3

Strengthen measure as a funding tool

Amount of funding

- Current average percentage of costs covered: 26.37%. Increase percentage of costs covered to encourage applications

Eligible costs

- Include appropriate fees for external speakers
- Include publication costs for conference proceedings (AM4)
- Include additional catering costs and complementary PR measures
- Include salary for personnel

Application documents

- Less quantity and more flexibility in the kind of documents to be provided, e.g., allow a meaningful description of the qualifications of key speakers at a conference or lecture series (to date: CVs of all speakers)

Eligible activities

- Conferences, workshops and lecture series without the requirement to be open to the general public (optional, not mandatory)
- Do not insist on registration fees (optional, not mandatory)

Selection criteria:

- Change 'Scientific objectives & envisaged results' to 'Scientific relevance'
- Dismiss 'Scientific competence of the organiser'

- Dismiss ‘Scientific interest for Luxembourg’

Additional recommendations

- Activate private sector to participate in AM3 events to start patronage schemes and to encourage exchange between the private and public research sector

AM4

Amount of funding

- No upper limit on lump sum if AM4 stays as separate funding tool
- Sufficient cost coverage, providing €4,000 (median costs: Conference proceedings: €4,000; journals €1,510; monographs €3,900 and PhD theses €1,583) for PhD theses and journals, not for monographs and conference proceedings

PhD theses and articles in journals

Allocate to the project context

Eligible beneficiaries

- Young researchers up to 4 years after completing their doctorate and PhD students working on an FNR-funded project: Lump sum (similar to lump sum granted to AFR beneficiaries)
- All others: On application in the context of FNR-funded projects: Similar lump sum to that detailed above

Cost coverage

- Based on invoice within the flexibility rules for project management

Conference proceedings

Merge with AM3

Amount of funding

- Increase amount of funding, based upon costs applied for, no lump sum agreement

Cost coverage

- Based on invoice within the flexibility rules for project management

Monographs

Eligible applicants: Leave as is

Eligible costs

- Publications and minor accompanying costs

Cost coverage

- Co-funding model, no lump sum agreement

Selection procedure

- External evaluation obligatory

Selection criteria:

- Dismiss Author’s scientific background’
- Dismiss ‘Scientific interest for Luxembourg’

2. Background and Objectives of the Evaluation

2.1. Introduction

This report presents the results of an evaluation of the Accompanying Measures (AMs) currently offered by the Fonds National de la Recherche (FNR). It covers the time frame from January 1st, 2007 to December 31st, 2010, as all of the current AMs had been implemented starting 2007 and the majority of the activities funded in 2010 had been closed by the time the evaluation was carried out.

Since 2001, the National Research Fund has offered Accompanying Measures (AM) to benefit the Luxembourg research system and society. During the initial phase of the Luxembourg research and innovation system, AMs were originally created to complete the FNR “tool box” to ‘create a friendly environment’ and to improve the conditions for carrying out research activities. They consist of a wide range of smaller activities and measures, which, have been modified in nature and number several times over the past years to complement existing and new funding tools and to adjust the FNR’s funding framework to meet the changing needs of the research system in Luxembourg and its society.

At present, the FNR offers 4 major Accompanying Measures: AM1 “Promotion of Scientific Culture”, AM2 “Training and Mobility”, AM3 “Organisation of Scientific Conferences in Luxembourg” and AM4 “Scientific Publications”. AM2 “Training and Mobility” is further subdivided and offers a diversified portfolio of sub-programmes: AM2a “Active Participation in Conferences Abroad”; AM2b “Organisation of Trainings for Researchers in Luxembourg”, AM2b “Training of Researchers Abroad” and AM2c “IN Mobility of Researchers” as well as AM2c “OUT Mobility of Researchers”, adding up, in total, to 8 funding programmes.

With 1,524 applications received between 2007 and 2010, the AMs are the most frequented funding scheme of the FNR. During this period, the FNR funded 1,151 activities and thus 75.5% of all applications, an unusually high success rate for extramural funding. However, all of the activities funded under the AM scheme are part of the core business of research and the research system. Compared to other funding schemes operated by the FNR, the AMs account for a relatively small budget, yet create a high workload for FNR staff, applicants and beneficiaries. The questions underlying this evaluation were thus not so much whether the activities of the AM funding scheme were essential to research and the Luxembourg research system, but rather whether and to what extent they need to be funded by the FNR and, if so, to what extent they are already funded by the FNR’s other funding tools.

In an initial attempt to avoid redundancies and to reduce the workload of all participants in the funding process, the FNR excluded beneficiaries of their PhD/Postdoc programme (AFR) from applying for funding under the measures AM2a and AM2b as of January 1st, 2011, as they are provided with lump sums to cover participation in conferences and training abroad. Ignoring AFR beneficiaries between 2007 and 2010, there were still 1,279 applications received, 83.9% of which were submitted to the AM funding scheme. Out of these applications, the FNR funded 1,075 activities, which accounted for a total funding volume of €4.4 million, with an average success rate of the applications of 84%.

2.2. Objectives

In accordance with the FNR performance contract with the Government of Luxembourg for 2011 – 2013, this evaluation was conducted to provide a clearer picture of the added value

and impact of the AMs currently offered, to identify their benefits crucial to research and society and to elaborate recommendations for possible improvements to meet the key objectives elaborated in the evaluation of the FNR conducted in December 2010 by the Ministère de l'Enseignement Supérieur et de la Recherche du Grand Duché de Luxembourg.

This evaluation was conducted following the most relevant recommendations given in the 2010 evaluation of the FNR:

- Keep scientific quality as key objective and selection criterion;
- Contribute to Luxembourg's international visibility and attractiveness;
- Improve the comprehensibility of the selection process;
- Simplify the programmes;
- Provide a clearer picture of the added value and impact of the FNR's activities.

In the background of these recommendations, changing societal challenges and changes and a rapidly developing research system, the main issues addressed in the evaluation of the current AMs were:

- Fulfilment of the FNR's mission and strategic objectives;
- Satisfaction of applicants and beneficiaries with the AM funding scheme;
- Importance of AMs to applicants and other stakeholders;
- Efficiency and effectiveness of the AMs;
- Strengths and weaknesses of the funding scheme:
 - Need for new AMs, possibility to discontinue AMs;
 - Suggestions for changes and improvements;
- Necessity of the AMs;
- Benefits of the AMs;
- Comprehensibility and transparency of the funding scheme;
- Identification of objectives and added values generated by AMs;
- Identification of indicators for the impact of AMs to create a basis for the development of criteria for the planned impact study of the national research and innovation system to be conducted in 2014.

On the basis of this evaluation of the AMs, the FNR will draw up a strategy for their further development and continuation.

3. Major Findings of the Evaluation

Steady increase in funded AM applications from 2007 to 2010

In general, applications for AMs increased constantly between 2007 and 2010, ignoring minor fluctuations.

High success rate of AM applications

The success rates of applications for funding under the AMs are unusually high for applications for extramural funding and varied between 72% (AM2b) and 92% (AM4).

Retracted or unsuccessful applications

Looking at unsuccessful or retracted applications, we have to bear in mind that 84% of all applications to AMs during our evaluation period were approved and only 16% were unsuccessful or had been retracted by the applicant after approval.

The most common reason for unsuccessful applications, by AM, were:

- AM1 Rejection of the application by the FNR due to poor quality;
- AM2a Ineligibility of the application;
- AM2b Ineligibility of the application;
- AM2c Retractions of approved applications by the applicant;
- AM3 Rejection of the application by the FNR due to poor quality;
- AM4 Ineligibility of the application.

Only 37% of the applications that were unsuccessful were rejected by the FNR due to poor quality, closely followed by 30% of failed applications that were rejected due to ineligibility, most frequently due to the applicant missing the application deadline. A result that one would not have expected if selection is made by large parts on the basis of quality.

If applicants received feedback from the FNR, which is only given in cases of rejection, ineligibility and cancellation of funding after approval, the feedback they received from the FNR was primarily helpful for AM2a and AM2c applicants, while the majority of applicants to the AM3 or AM4 schemes who received feedback from the FNR did not consider it to have been helpful (AM 2b applicants evaluated the feedback neutral).

62.9% of AM1 applicants who responded to our survey did not have to modify the work proposed in their application. 17.1 % (6 respondents) were asked to revise their application by the FNR. Three of these applicants shared their experiences with us, one noting that the project was granted funding after they followed the suggestions, whereas the other two did not consider the comments by the FNR to have been helpful.

High frequency of applications when permitted

Applicants to the AMs tend to apply for a measure more than once a year when permitted by the guidelines. With the exception of AM2a and AM2b, both of which restrict applicants to one application per year, this can be seen for AM1, AM2c, AM3 and AM4.

Different application rates by gender and AM

About $\frac{1}{3}$ of all AM applicants are female, while $\frac{2}{3}$ are male. There are striking differences in the application rates by each gender between the different AMs. Applications from female applicants were highest, proportionately, for AM2a, participation in conferences abroad (41.3%), while applications from male applicants accounted for the highest proportion for

AM2c (86.9%), followed closely by applications to AM3 (83.3%). To a large extent, the latter percentage may reflect the male-dominated occupancy of leading positions in institutional research structures rather than being a result of sex discrimination, as it is quite often the head of an institution or department rather than the candidates themselves who apply for the mobility measure under AM2c and AM3 applications are submitted by representatives of research institutions.

Similar success rates for each gender

Looking at the success rate of applications from female and male applicants, there is no significant difference, on average, with a success rate of 84% for male applicants and 85% for female applicants. This also holds true for each AM individually, with the exception of AM2c. Here, the success rate for female applicants tends to be lower than the success rate for male applicants (77% success rate for male applicants, 65% for female applicants). This is a phenomenon that the FNR should keep an eye on.

Similar success rates for each thematic domain

The success rates of applications to the FNR's 3 priority domains, LS, PE and SH, are very similar on average, with success rates of 83% in SH, 84% in PE and 86% in LS respectively⁵.

Applications in the field of SH are most successful for AM2a, followed closely by AM4 and AM1. They are the least successful for AM2b. In PE, the differences in the success rates of applications for the various AMs are not as pronounced, varying between 80% and 90% for AM2a, AM2b and AM3. In this domain, applications for AM1 are the least successful and applications for AM4 are the most successful, at 96%. A similar situation is seen for applications in the LS domain, with highest success rates seen once again for AM4 and the lowest success rate for AM1.

Major channels of international exchange

The top 8 countries (USA, France, Germany, Italy, Great Britain, Canada, Spain and Australia) visited by AM2a beneficiaries are identical in statistical analyses and in our survey, and indicate major channels of international exchange with Luxembourg. For the top 3 of these countries this also holds true for AM2c for exchange in both directions.

When looking at the PROs of Luxembourg individually, they do have clear preferences for visiting specific countries: 30% of all AM2a-funded visits by applicants from the UL are to the USA, 24% of all AM2a-funded visits by applicants from the CRP Henri Tudor are to France, 35% of all AM2a-funded visits by applicants from the CRP de la Santé are also to the USA, 45% of all AM2a-funded visits by applicants from the CRP Gabriel Lippmann are to Austria, with the USA strikingly in second place, with 33% of the visits being to the USA, and 30% of all AM2a-funded visits by applicants from the CEPS/INSTEAD being to Canada, almost on a par with 27% to the USA.

These data give us a picture of the major channels of international exchange on different levels and can contribute to the development of strategies for collaborative agreements between funding organisations as well as research institutions.

⁵ *LS = Life Sciences, PE = Mathematics, Physical Sciences, Information and Communication, Engineering, Universe and Earth Sciences, SH = Social Sciences and Humanities*

Top 4 origins of applications

The top 4 origins of applications for AMs come 1st with 32,37%, from the University of Luxembourg, 2nd, with 17,44% from Luxembourg citizen ex territory, 3rd with 11,65%, from CRP Henry Tudor, and 4th with 9,1% ,from non-academic institutions/applicants.

Beneficiaries ex territory

Taking all applications for AMs together 17,44% of the applications are submitted by Luxembourg citizens who work outside Luxembourg. The majority of these applications are applications for AM2a, active participation in conferences abroad, and account for 52.3% of all AM2a applications.

Although applicants ex territory constitute a large group of applicants, to our surprise most representatives of public institutions with a research mission were not even aware of the existence of such a funding tool, which obviously does not play a very important role for their institution, if any at all. When asked about the need to offer funding opportunities for Luxembourg citizens living or working outside Luxembourg, the majority did not see any direct or indirect necessity to support researchers, predominately on the basis of the fact that they are Luxembourg citizens. Potential benefits of this support, such as strengthening the link between this group of researchers and Luxembourg or supporting their return to Luxembourg were not perceived by them. As the eligibility of this group might originate from strategic considerations and political will, we do not recommend excluding this group from eligibility. However, we extend the idea of some suggestions made by interviewees to distinguish between the location of Luxembourg citizens ex territory, emphasising that they would expect the greatest benefits from support for such researchers living within the ‘Großregion’ of Luxembourg, so that it would be worthwhile to add more direct benefits to such support, either by supporting participation in events held in Luxembourg, in particular in connection with participation in training courses in Luxembourg (AM2b) or by tying funding to collaboration with research groups working in Luxembourg (AM4), thus putting it in the project context with measurable quality criteria.

Communication strategy

Our results clearly indicate the different communication preferences between the more research-driven AM2-4 applicants and applicants for AM1, who are more focused on societal needs. While AM1 applicants clearly prefer verbal communication and seek personal contact with the FNR staff, AM2-4 applicants prefer first-hand written information. As it turned out from the interviews with the latter group of applicants, further differences between the university and research institutions have to be taken into account. While research institutions insist on communication via their established communication structures, the university prefers direct communication with researchers, applicants and beneficiaries. We recommend adapting communication concepts to these cultural differences between the university and the research institutions and giving preference to verbal communication and personal contact for AM1 applicants and beneficiaries.

Comprehensibility of the headings of the AM funding scheme

In order to find the right information on targeted funding, applicants are offered headings of the overall funding scheme as well as of different subprogrammes. These are intended to act as guides to direct potential applicants through the FNR’s funding portfolio.

When asked about their comprehensibility, the majority of applicants rated the comprehensibility of the headings of the AM funding scheme as ‘somewhat understandable’. As we only asked people who already had experience with the AM funding scheme, all of

them were familiar with the respective terminology, of course, yet didn't rate them with best grades, indicating that there is room for improvement, especially for the general heading 'Accompanying Measure', which was less comprehensible and therefore less helpful as a guide, in particular for AM1 applicants, and 'Promotion of Scientific Culture' for AM2-4 applicants.

Transparency of the AM selection procedures

The majority of applicants rated the AM selection procedures in general as transparent, although not completely transparent. AM2a, AM2b, AM2c and AM4, in particular, were rated within the same range, while the transparency of the selection procedure of AM3 was viewed most critically, a result which was also confirmed in interviews with major stakeholders. However, the most criticism was addressed at the selection and eligibility criteria rather than the selection process itself. Here, the FNR should put the priority on revising the guidelines and selection criteria, as discussed in detail below.

Time and effort for the AM management

Even if we ignore the time external reviewers might spend on the evaluation of an application, which might be difficult to estimate, the most time and effort for AM management is spent on AM1, AM2c and AM3, most probably reflecting the high complexity of these activities.

Predicted reduction in the FNR workload as a result of the exemption of AFR beneficiaries from AM2a and AM2b

As of 2011, AFR beneficiaries are no longer eligible to apply for AM2a and AM2b. Although this exemption was introduced after the time frame of this evaluation, we wanted to estimate the anticipated reduction in the administrative workload. While approx. $\frac{1}{3}$ of the beneficiaries of AM2a are AFR beneficiaries, almost 90% of the AM2b beneficiaries are also AFR beneficiaries, leading us to expect a reduction in applications to all AMs of approx. 10% to 20%.

Efficiency of budget management by the FNR

We investigated the efficiency of the budget management of the FNR by different perspectives in detail. First we wanted to know, if there is a divergence between the budget granted and the actual amount later paid by the FNR. In our statistic analysis of the period 2007 to 2010 we found that the granted budget by the FNR differed by 17%, on average, from the actual payment taking all of the current AMs altogether.

Differences are apparent between individual AMs. For AM1, AM2c and AM3 the FNR does fairly well (7%-8% difference between the budget granted and actual payments). For AM2a, AM2b and AM4 the gap between the budget granted the amount paid exceeded 30%. Considering the differences in reimbursement between AMs, this is not surprising. While the FNR takes the estimated cost of AM1, AM2c and AM3 activities as the basis for calculating the amount granted in the approvals, for AM2a, AM2b and AM4 the FNR initially grants lump sums and only later determines the final payment based on invoices for the actual costs. For each of these measures, AM2a, AM2b and AM4, the accuracy of the budget granted thus depends, to a high degree, on the amount of the lump sums granted (see also AM2a, AM2b and AM4 for detailed further analysis).

We also investigated how well the FNR estimated the budget they would need to cover actual payments for each AM in the years 2007 to 2010. The FNR estimated the budget requirements best for AM2a, with just a minor divergence of 1.5%. The budget estimates for AM1, AM2b, AM3 and AM4 are also pretty good, with divergences of 11.3%, 11.9%, 15.2%

and 13.2% respectively. These divergences may reflect, in part, the unpredictable nature of the types of activities conducted under AM1, AM2b and AM3 (type of conference, type of training course or type of an AM1 event) that funding is applied for, e.g., if a conference with 20 or 100 participants is planned. For AM4, they are a reflection of the high complexity of this measure, as AM4 covers a wide range of types of publications, ranging from PhD theses to monographs, with varying rates of cost covered by the lump sum assigned by the FNR.

It was, however, striking to see the divergence of over 40% between the estimated budget and actual payments for AM2c. This may be due in part to the relatively high retraction rates of approved applications by the applicants, which are not foreseeable by the FNR. However, this can only be part of the story, as retractions only account for 9% of all AM2c applications. Here the FNR will have to pay close attention in the future to improving the planning of the budget for AM2c.

Financial contribution by the FNR

In accordance with the developing research system in Luxembourg and the growing numbers of applications, the FNR's total budget for AMs, as well as for the individual measures has grown steadily, with a total budget for AMs of €894,000 in 2007, €893,000 in 2008, €1 million in 2009, and €1.5 million in 2010.

Comparing the development of the financial contribution by the FNR for each AM from 2007 to 2010, contributions for all AMs increased steadily, ignoring minor fluctuations, with one exception: The budget for AM2c, which, most probably due to a lack of significant growth in the number of applications, revealing a tendency to decrease in proportion, in comparison to the other measures.

Cost coverage of AM activities by the FNR

The percentage of costs of an AM activity that are covered by FNR funding is quite different and varies between 26.4% (for AM1) and 83.4% (AM2c).

Cost coverage for activities funded by AM2a (80.3%), AM2c (83.4%) and AM2b (69.3%) is pretty high, when compared to the coverage rates for AM1 (31.3%), AM3 (26.4%) and AM4 (42.75%). These differences are due, in part, to the different funding regulations, as AM3 and AM1, in particular, are considered to be co-funding models, in which the applicants are expected to cover a significant proportion of the actual costs themselves or from other sources. For AM1 and AM3, however, we do consider the amount of funding to be extremely low and recommend increasing the subsidies by the expansion of the eligible costs, e.g., to include lecture fees for speakers (see below for detailed analysis).

These differences in cost coverage rates between the AMs are partly due, for AM4 in particular, to the provision of one maximum lump sum for a variety of different activities, the cost of which varies significantly (see also AM4 for a detailed analysis). For AM2a and AM2c, 80% cost coverage is within an acceptable range for extramural funding⁶. Within this group, the cost coverage rate of 69.4% for 'training of researchers' and 'summer schools' (AM2b) seems rather low and should be observed, but might reflect insecurities and ambiguities in the reimbursement and eligibility rules of the relatively new sub-tool 'summer schools'.

⁶ Forschungsmanagement: Fördermittel einwerben und verwalten, 2009, Ed. Britta Krahn, Dr. Christian Rietz, Dr. Wilma Simoleit

Specifics of cost coverage of AM activities by lump sums with upper limitation

For AM2a, AM2b and AM4 the FNR grants a lump sum of €2,000 for AM2a (active participation in scientific conferences abroad) and AM2b (training of researchers) and €4,000 for AM4 (scientific publications incl. PhD theses) publications on application. The upper limitation on cost coverage under these measures is the lump sum granted. However, these sums are not paid out at the time of approval, as reimbursement subsequently follows on the basis of the invoice submitted for the actual costs. If the costs of an activity are lower than the lump sum granted, they are completely covered. The remainder of the lump sum flows back into the FNR's budget. If the costs of an activity exceeded the lump sum granted, the beneficiaries have to cover the excess costs. In cases where the costs exceeded the lump sum, this leads to a number of inhomogeneities and unequal treatment of beneficiaries.

Allocation of AM2a, AM2b and AM4 (journal articles and PhD theses) to the context of FNR-funded projects in the Core, Inter, Pearl and Attract programmes would have the advantage that the lump sums granted can be used much more flexibly by the researchers, within the budgetary flexibility rules for FNR-funded projects, than when drawn upon the measures currently on offer. For example, should the costs for participation in a conference be higher than the current lump sum of €2,000 within the project context, the remainder can be covered, within the range of budgetary flexibility, by the remaining approved budget for the project. If the actual costs were less than the lump sum granted, these funds can be used where necessary within the context of the project. Another major source of complaints in our interviews as well as in the survey was insecurity about the actual reimbursement. In the case of allocation, reimbursement could be handled according to institutional rules, thus creating more security. In addition to this, up to now, another source of complaint in the interviews as well as in the survey was that applications to AM2a and AM2b are only possible once a year. Here, flexibility could be increased, as the intervals between AM2a or AM2b activities are, by necessity, within the approved duration of the project. They could then be utilised very flexibly, at any time within the project time frame, without having to go through application and selection procedures, reducing the time burden and the workload.

The situation is more complex for AM4

There are 4 different categories of publication costs covered within AM4, which have to be considered separately: Costs for conference proceedings, articles in journals, PhD theses and monographs. Upon approval of an application, the FNR grants a lump sum of €4,000 (we determined median costs of €4,000 for conference proceedings; €1,510 for articles in journals; and €1,583 for PhD theses, for monographs in average the FNR provided €3,900 to these costs, that vary tremendously in amount, exceeding the provided lump sum by far), which is sufficient to cover the average costs for PhD theses and journal articles. These latter costs should also be merged into the project context to increase flexibility and reduce the administrative workload.

Funding for AM4, the publication of conference proceedings, should be allocated to AM3, the organisation of conferences in Luxembourg. As the cost of such publications may vary significantly depending, for example, on the size of conferences, lump sums with upper limits are not suitable for equal treatment of all beneficiaries. Here, reimbursement should follow a co-funding model (see above).

The same holds true for AM4, publication of monographs, if they are not within the project context in Core or Inter, or within Attract and Pearl. Such applications should still remain within the refocused AM4, with reimbursement of publication costs and minor supplementary costs if required by the suggested co-funding model

Satisfaction of stakeholders with the AM funding scheme

In general, the research and research-interested community is satisfied with the AM funding scheme. This perception differs from the perception by the FNR itself, which perceives the management of the AMs as having a high workload with a very limited degree of influence on selection by quality.

Even so, these are no hard facts, differences in perception are symptomatic of the current situation. While the FNR has realized a switch in their function, originally providing the grounds for research and a research system in Luxembourg, to the promotion of scientific quality and international competitiveness in the current follow-up phase, the research community is not yet fully aware of this situation.

Management of AMs by the FNR

In general, the management of funding by the FNR was rated as good, mixed with some complaints about too much bureaucracy and a high workload in the funding process.

AM1 applicants explicitly rated different categories of the funding process for AM1 in detail. In general, they were satisfied with the procedures. The highest level of satisfaction amongst AM1 applicants was seen with regard to the support given to applicants by the FNR and the time it takes from submission of the application to the communication of the funding decision. They are satisfied with the payment procedures, the communication with the FNR and the information they receive from the FNR. They were slightly less satisfied with the selection procedures, especially with the clarity of forms. Here the FNR should pay attention to further simplifying the forms and increasing the amount of verbal communication, as mentioned above.

Reporting and payment procedures

The highest level satisfaction with reporting among the AM2-4 applicants was seen for AM4, followed by AM2b and AM2a. The lowest level of satisfaction was seen for AM3 and AM2c. However this may reflect the fact that AM3, organisation of scientific conferences in Luxembourg, and AM2c, mobility of researchers in and out, are the two most complex AMs in terms of content. Here, we suggest that the FNR should reconsider the amount of information required to ease the bureaucratic burden and increase flexibility (see also AM3 and AM2c for detailed discussion).

The majority of AM1 applicants were content with the amount of information required in the final and financial reports.

Those AM2-4 applicants who expressed an opinion about their level of satisfaction with the payment procedures were most content with the procedures for AM2a, followed by AM2b, AM4, AM3 (we placed AM3 procedures in 4th place as there was one dissatisfied respondent, whereas AM4 did not have any dissatisfied respondents) and AM2c comes in last.

Importance of AMs for major stakeholders and the FNR

To get an overall impression of the importance of AMs to major stakeholders and FNR representatives, we asked interviewees to rate the importance of AMs according to their own individual criteria. Once again, this does not, of course, give hard facts, but rather reveals tendencies in perception.

When compared by tendency, PROs and the FNR representatives rated AM2a and AM2b as being significantly less important than the other measures. Even so, the representatives of the

PROs perceived them as being slightly more important than the FNR representatives did. At first sight, this might seem quite surprising, considering that 42.8% of all AM approvals support active participation in conferences abroad (AM2a). However, one may argue that, firstly, our interviewees were representatives of institutions inside Luxembourg, while the majority of the beneficiaries of AM2a are Luxembourg citizens working outside Luxembourg, and secondly, for AFR beneficiaries these costs are now covered by AFR approvals, further reducing the importance of funding by AM2a in general.

The PROs and the FNR representatives gave identical ratings for AM3 as being of high importance, almost equal to the importance of the AM2c IN mobility. Interestingly, the importance of AM2c In and OUT mobility was rated as being of equal importance by the FNR representatives, while the AM2c OUT measure was considered to be slightly less important by the PROs, also reflecting the lower number of applications for this measure.

Significant differences in importance were revealed for AM1 and AM4. For AM4 the interviewees explained that their lower rating of the importance of this measure was partly due to the existence of other budgets at the research institutions provided to cover these financial needs, making them less dependent on funding from the FNR.

As for the lower rating of the importance of AM1 for the PROs, this might be due, in part, to the composition of the interviewee population, as most interviewees represented organisations with a strong focus on research rather than on interactions with the general public. However, it may also be indicative of a lower degree of awareness amongst the representatives of PROs about the need to maintain the dialogue with the general public about research and its rapid development to provide a beneficial foundation for the growing needs of the research system in the Luxembourg society. Here, the FNR should pay close attention to fostering further developments and increasing the level of awareness in the scientific community as well as providing adequate funding and funding tools for the initiation and the conduct of such activities.

Importance and necessity of AMs for the applicants

As the AMs address core issues of a researcher's professional life, they were generally rated as being important to very important by the majority of applicants. However, there were differences, in particular when we look at the rating 'very important'. These ratings were partially in contradiction to the perception of the importance of the measures to the representatives of the PROs in our interviews. For most AM applicants, AM2a was rated as being the most important, followed by AM2b, AM4, AM2c, with AM3 coming last. However, one has to be careful in interpreting these rankings, as they might, in part, simply reflect the experience and background of the respondents who answered our surveys. Most of the respondents to the AM2-4 survey were young researchers, within the first 4 years after completing their doctorate. They considered AM2a to be more important for them than AM3, organisation of conferences, for example, as most of them had applied to AM2a and few of them had probably applied to AM3.

These ratings might also be less indicative of the importance of AMs to applicants than of the need for FNR funding of these activities, especially in the case of AM4, funding of publications, which was rated as being of medium importance by all AM2-4 applicants. As some of the respondents do applied research, publishing is not of utmost importance to them, taking second place to the valorisation of their research results. At this stage, they most probably have other sources of income to finance publications. In addition to this, most institutions either have a budget or at least can mobilize a budget to finance or co-finance

publications and theses. Also, these costs can also be covered within the major funding tools provided by the FNR, giving it further lower importance to applicants of AM2a.

The most common reason for applicants to apply for funding from an AM is the amount of funding. The second most common reason for AM1 applicants to apply is that they perceive FNR funding of their activity as quality label. This reason ranks 4th for AM2-4 applicants. For them, the second most common reason for applying to the FNR is the increase of visibility of their research given by FNR funding.

Alternative funding sources

Most of the applicants to AM2a, AM2b, AM2c and AM4 did not receive funding from other sources for the activity planned in unsuccessful applications. The majority of AM3 applicants did receive funding from other sources. However, as explained in the interviews, they felt extremely high pressure to find alternative sources of funding, as they would have lost face if a conference or meeting with invited speakers that had already been announced (a prerequisite for application) had not taken place. However, finding alternative sources of funding was extremely difficult for them.

The most common alternative sources of funding were institutional funds, followed by other unidentified funding sources not named, partial sponsorship, and finally complete sponsorship.

Benefits of the AMs

The 3 main benefits of AM2-4-funded activities identified by the applicants were ‘Gain of knowledge in my research field in general’ (200 respondents) followed by ‘Establish new collaboration’ (183 respondents) and ‘Publications’ (62 respondents). A medium to long-term boost to the career only came in 6th. As most of the applicants to AM2-4 are young researchers within the first 4 years after completing their doctorate, this indicates that most of them should also increase their awareness to utilise AMs strategically for career development, e.g., when participating in conferences abroad (AM2a).

While AM1-funded activities predominantly had no impact, or an impact not asked about in the survey, followed by resulting in cooperation with non-profit organisations. AM2-4-funded activities most commonly resulted in the establishment of partnerships or collaborations in academic partnerships outside Luxembourg. Partnerships with the private sector and industry were largely underrepresented. Some 14.7% of the AM-funded activities resulted in a partnership with the private sector or industry outside Luxembourg, while only 10.2% resulted in a partnership in Luxembourg. Here we see the need to increase, and further potential to encourage such interactions (see also the detailed discussion of AM2c).

Objectives and added values of the AMs

As determined in the FNR performance contract with the Government of Luxembourg for 2011 – 2013, no systematic analysis of the AMs had been conducted to provide a clearer picture of their objectives and added values or to elaborate recommendations for possible improvements and to lay the groundwork for the elaboration of suitable indicators of their impact before this evaluation was carried out. This is also seen in the light of the impact study of the FNR that will be conducted by the Ministry for Higher Education and Research in 2014.

In the course of our analyses, we identified objectives and added values of the current AMs in the light of the key objectives of the FNR as determined in the evaluation of the FNR

conducted in 2010. Based on the evaluation of the stakeholders, we identified 7 major and 10 additional objectives and added values of the AMs.

Major objectives and added values of the AMs identified:

- Increase in national and international visibility;
- Increase in national or international network (strengthening existing collaboration, establishing new collaboration);
- Increase in the resources of my institution;
- Increase in attractiveness of the research system;
- Increase in the understandability of research;
- Increase in interest in research;
- Label of quality.

Other objectives and added values of the AMs identified:

- Training of young scientists;
- Bring competence to Luxembourg;
- Building up competence;
- Increase in know-how (in Luxembourg);
- Guarantee of continuity (of an activity);
- Acceptance as a research institution;
- Elaboration of a project;
- Development of a basis for further projects;
- Increase of visibility of the FNR;
- Activation of multipliers.

Our analyses also identified AM1, AM2c and AM3 as measures with the highest impact and greatest potential to fulfil key objectives and achieved added values defined by the mission of the FNR.

Indicators to measure the impact of the AMs

With the introduction of the performance contract as a tool for management and communication with the ministry, the FNR introduced indicators to define, monitor and evaluate the FNR's general objectives. However, as part of a development process, the FNR realised, that some of the indicators were inadequately defined (either difficult to measure, not pertinent, or not fully reflecting the objective) and should be adapted or changed for the next performance contract.

For example, to date the FNR uses the increase in the number of AM2c applications as a direct indicator of the impact of AM2c, but it is also aware of the potential problems faced in general with quantitative indicators based on absolute numbers. Indeed, quantitative indicators turn out to be less indicative of the impact of an AM measure, with one exception, this being AM2a, participation in conferences abroad. Here, the number of applications reflects a pre-selection based on quality and added value of the participation for the research community, as, prior to the application, the candidate already has to have been accepted by the scientific committee of the conference, as a precondition for application.

In this evaluation we based the identification of indicators to assess the impact of AMs on their identified objectives and added values, with a focus on adequate reflection of the FNR's mission.

We suggest at least one indicator for each AM to measure its impact, for most AMs we suggest more than one. If we suggest multiple indicators, we recommend that they should be used complementarily. Some of them need to be introduced or reintroduced, for instance the

evaluation of events by the participants and questionnaires, while others are already being conducted, such as long-term studies in secondary schools into the number of graduates to intend to study a field of science at the university. In the light of the impact study of the national research and innovation system planned for 2012/2013, they will provide a solid basis for the development of suitable criteria.

Suggestions by the stakeholders

The majority of interviewees were content with the type of activities funded by the AMs, but expressed the wish that the FNR should reinstall a measure to support the preparation of a European Union research project. Such a measure had previously been offered by the FNR, but was discontinued in 2010 due to a lack of applications. Interviewees explained that at that time the measure had been offered too early with respect to the development of the research system and should be reconsidered in the light of the increasing number of applications to the EU. In line with the key objective of the FNR to ensure and maintain scientific quality, funding for the preparation of an application to the EU might be problematic and evaluation of such applications would have to be coupled with quality criteria that are yet to be defined.

More than 54% of the respondents to the AM2-4 survey were content with the FNR's activities. Some 37% wanted to see the FNR become more active. Only 1 respondent wanted the FNR to be less active than it currently is. If the FNR were to increase its activities, most applicants suggested the FNR should:

- Intensify funding to highlight the value of scientific outcomes (107);
- Increase its activities to enhance knowledge & technology transfer in general (83).

In addition to this, more support of experienced researchers was requested during the interviews.

Some 62.2% of the respondents to the AM1 survey were content with the activities of the FNR, 35.1% wanted the FNR to become more active, and 2.7% were indifferent. Seventy percent of the respondents want the FNR to increase the support they provide through AM1 projects, 55% to increase FNR support through the initiation of AM1 projects, and 30% hoped that the FNR would increase their support of coordinating AM1 activities, while the same number of respondents asked the FNR to become more active in connecting the academic and the private sector. In the free comments, of AM1 applicants and beneficiaries repeatedly expressed a wish for more personal contact and verbal information.

We have considered these suggestions in our recommendations, in particular in our suggestions to strengthen AM1, AM2c and AM3.

4. Evaluation Design and Methodology

4.1. Organisation and timing

Lead for this evaluation is the Administrative Board and the Secretary General of the FNR based upon an assignment in the performance contract of the FNR and the Luxembourg Government.

The evaluation was conducted between May 2011 and February 2012 and involved the following procedural steps:

- Development of a road map for the evaluation;
- Profound statistical analyses;
- Extensive document analyses;
- International context analyses;
- Consultation of applicants and beneficiaries of AM1 and AM2-4, each using customised surveys (September 16th to October 21st, 2011);
- Consultation of major stakeholders by way of semi-structured interviews (between September 28th and November 14th, 2011);
- Presentation of the findings of the evaluation to representatives of the FNR;
- Discussion of a strategy for the further development of the AM funding scheme and implications for the impact study to be conducted;
- Submission of the evaluation report (February 24th, 2012).

The evaluation process involved both quantitative and qualitative analyses of the AMs. The quantitative analyses were mainly based on statistical evaluations of the AMs. The qualitative analyses were based to a large extent on 2 surveys and on interviews with major stakeholders of the AM scheme.

Methods used:

- Document analyses;
- Statistical analyses;
- 2 online surveys (AM1 in German and AM2-4 in English);
- Semi-structured interviews;
- International context analyses;
- Workshops.

4.2. Consultation of stakeholders in the evaluation

Stakeholders were consulted by different ways:

By interview

Representatives of the:

Ministry for Higher Education and Research;

Public Institutions with a Research mission:

University of Luxembourg;

CRP Henri Tudor;

CRP Gabriel Lippmann;

CRP Santé;

CEPS/INSTEAD;

MNHN;

FNR officials;

FNR staff.

By survey

We conducted 2 surveys due to significant differences in the experience background and the crucial needs of two groups of beneficiaries and applicants: One survey for applicants and beneficiaries of AM1 and stakeholders close to or representing the research-interested public, to account for the various and diverse groups in society and their varying needs, and a second survey for applicants and beneficiaries of AM2-4 and the research stakeholders.

We choose not to explicitly involve reviewers of the AMs in the evaluation, although there were some in person overlaps of this population with the stakeholders involved. This decision was based on the specific evaluation situation of the AMs. We are looking at 8 sub-programmes belonging to 4 major funding tools that do not have an extended reviewer population and reviewers with extensive experience across the various tools. Firstly, not all of the tools in this funding scheme are evaluated on a regular basis by external reviewers. Secondly, AM2a, the most frequented funding programme of the scheme and AM2b were evaluated solely internal by the FNR. No external reviewer would thus have been familiar with them.

4.3. Methods

4.3.1. Document analyses

We extensively analysed a series of relevant documents for:

- a. The Legal framework:
 - Loi du 31 mai 1999 portant création d'un fonds national de la recherche dans le secteur public. Publication au Mémorial A n° 88 du 06.07.1999;
 - FNR Foresight, report 2007;
 - Performance Contract between the FNR and the Grand Duchy of Luxembourg;
 - Convention FNR/CP2-11-13.
- b. Relevant surveys and evaluation reports of the FNR:
 - Evaluation of the FNR by the Ministère de l'Enseignement Supérieur et de la Recherche du Grand Duché de Luxembourg, Dec. 2010;
 - Self assessment report of the FNR 2010;
 - Foresight Report in 2007, and
 - other relevant internal evaluations of the FNR.
- c. Documents relevant to the funding cycle of the AM scheme (sources of information, calls, guidelines and formularies) from application to selection, decision-making, administration of funding, reimbursement and reporting.
- d. Selected international publications on the subject.

4.3.2. Statistical analyses

To get a profound insight into the AM portfolio, we conducted extensive statistical analyses of existing data from calls for applications, selection procedures, management and reporting provided by the FNR. As the evaluation period, we selected January 1st, 2007 to December 31st, 2010, as all of the current AMs had been implemented starting 2007 and the majority of the activities funded in 2010 had been closed by the time the evaluation was carried out.

4.3.3. Online surveys

We consulted applicants and beneficiaries by conducting online surveys to learn about the experiences of applicants and beneficiaries with the AMs, their opinion and validation of various aspects of the AMs, including workflows (application, selection, programme management by the FNR, project management, reporting, payment procedures and

reimbursement) benefits and shortcomings of the AM scheme,. We also wanted to gain a clearer picture of the added value and impact of the AMs currently on offer for these two groups. We conducted two different surveys to ensure that crucial needs for research as well as for societal challenges could be taken into account appropriately in the development of a strategy for their further development and continuation. One survey for applicants of AM1, “Promotion of Scientific Culture” and a second survey for applicants of AM2-4, “Training and Mobility” (AM2), “Organisation of Scientific Conferences in Luxembourg” (AM3) and “Scientific Publications” (AM4).

Both surveys were conducted online and in parallel. According to differences in language preference the survey of AM1 applicants and beneficiaries had been conducted in German, the survey of AM2-4 applicants and beneficiaries in English. Applicants and beneficiaries of AM1 or AM2-4 in the years 2007 to 2010 were invited to participate in the respective survey by e-mail on September 16th, 2011. A specific link included in the e-mails gave the respondents direct access to the appropriate survey. As we knew from the statistical analyses that there were applicants to both AM groups, we send both invitations to this group so that they could take part in both surveys, allowing us to learn about their correlative experiences.

Both surveys were developed in rotation design. They were structured (in modules) such that respondents only received questions relevant to them in order to reduce the time it took to complete the questionnaire as much as possible. That is to say, for example, that respondents who did not apply for an AM2 measure between 2007 and 2010 skipped detailed questions about AM2 and continued with questions about the AM experiences they actually had made with AMs. Questions labelled with an asterisk (*) had to be answered in order to continue with the survey.

Within the questionnaire the respondents could navigate back and forward at the end of each page to include changes. They could interrupt answering the questionnaire at any time and continue later on. The questionnaire only counted as having been completed when closed properly by clicking the ‘Done’ button.

4.3.3.1. Time chart and course of the surveys

September 16th, 2011 Invitations to participate in the surveys were sent by e-mail to AM1 and AM2-4 applicants.

Announcement of the surveys on the FNR website.

October 4th, 2011 Call for active support to the representatives of public institutions with a research mission and the request to remind staff members to participate in the surveys.

October 10th, 2011 1st reminder of the invitation to participate in the surveys sent to AM1 and AM2-4 respondents by e-mail.

Reminder of invitation to participate in the surveys published on the FNR website.

October 17th, 2011 2nd reminder of the invitation to participate in the surveys sent to AM1 and AM2-4 respondents by e-mail.

October 21st, 2011 Closure of the AM1 and AM2-4 surveys at midnight.

4.3.3.2. Survey participation

Due to invalid addresses or addresses no longer stored by the FNR we asked 622 out of 665 AM2-4 applicants/beneficiaries in the period 2007 -2010 and 77 out of 81 AM1 applicants/beneficiaries in the period 2007 -2010 to share their experiences with the respective AM(s) with us and to make suggestions for the further development of the AMs.

AM1 survey

Forty one respondents took up our invitation, equalling **53.24%** of all applicants and beneficiaries of AM1 asked. Some 90.2% of the respondents (37 respondents) completed the survey.

AM2-4 survey

A total of **324** respondents participated in the AM2-4 survey, amounting to **52.09%** of all applicants and beneficiaries under the AM2-4 scheme between 2007 and 2010 asked. This much broader survey was completed by 272 (84.0%) respondents. We assume that some of the respondents to both surveys who did not complete the survey just forgot to press the 'Done' button, despite the instructions included in the survey, as more than the 272 respondents still answered the second-to-last question of the AM2-4 survey, for example.

Twenty one participants of the AM2-4 survey (6.48%) also had experience with AM1 applications/approvals. All of these applicants had applied at least once to AM1 and to one of the AM2 measures between 2007 and 2010.

4.3.3.3. Analysis of the AM1 survey

4.3.3.3.1. Structure of the questionnaire

1. General information about AM1 applicants and beneficiaries in the period 2007 – 2010 and their experience with AMs;
2. Applying;
3. Transparency and Understandability of selection procedures;
4. Impact and relevance of AM1;
5. AM1 beneficiaries and their experiences with the management of AM1 funding;
6. Retracted or unsuccessful applications;
7. Suggestions.

4.3.3.3.2. Profile of the AM1 respondents and their experiences

The majority of the respondents to AM1 were male (33 respondents, 80.5%) in the age between 30-60 years. 14.6% of the respondents were over 60 years of age. None of the respondents was younger than 30. They predominantly worked in the public sector in Luxembourg (87.8%), most of them as teachers/educators (65.9%), followed by professors emeritus/pensioners and scientists with a doctorate (14.6% each). The main fields of occupation were:

Mathematics, physical sciences and engineering (43.9%), followed by Environment (22.0%);
Social sciences and the humanities (19.5%);
Universe and earth sciences (17.1%);
Life sciences (14.6%), and
Information and communication technology (7.3%).

Respondents working in the fields of law or economics were not represented in the survey. We assume that people working in these fields have other sources than the FNR to finance AM1-like activities and therefore only represent a minority of applicants to AM1.

The vast majority of the respondents (87.8%, 36 respondents) are Luxembourg nationals (12.2%, 5 respondents were of other nationalities) and work in Luxembourg. Some 56.1% work at a secondary school, followed by 14.6% who were employed by a non-profit organisation when they applied for AM1.

Cross-experience with AM2-4

5 of the participants (6.5%) in the AM1 survey had cross-experience with other AMs from the group AM2-4. In detail:

- 1 respondent with AM2a;
- 0 respondents with AM2b;
- 1 respondent with AM2c;
- 2 respondents with AM3, and
- 1 respondent with AM4.

4.3.3.4. Analysis of the AM2-4 survey

4.3.3.4.1. Structure of the questionnaire

1. General information about AM2-4 applicants and beneficiaries in the period 2007 – 2010 and the AMs they applied to/their experience with AMs in general;
Experience with AM 2 (AM2a, AM2b, AM2c);
Experience with AM 2c;
2. Before applying/application;
3. Transparency and Understandability of the selection procedures;
4. Impact and relevance of AMs;
5. Retracted or unsuccessful applications;
6. Impact and relevance of AMs for the beneficiaries;
7. Management of AM funding;
8. Suggestions.

4.3.3.4.2. Profile of the AM2-4 respondents and their experiences

The majority of the respondents were male scientists (185 respondents, 57.1%) with a research experience of 1-4 years after obtaining their PhD (24.1%) as seen in Tab.1.

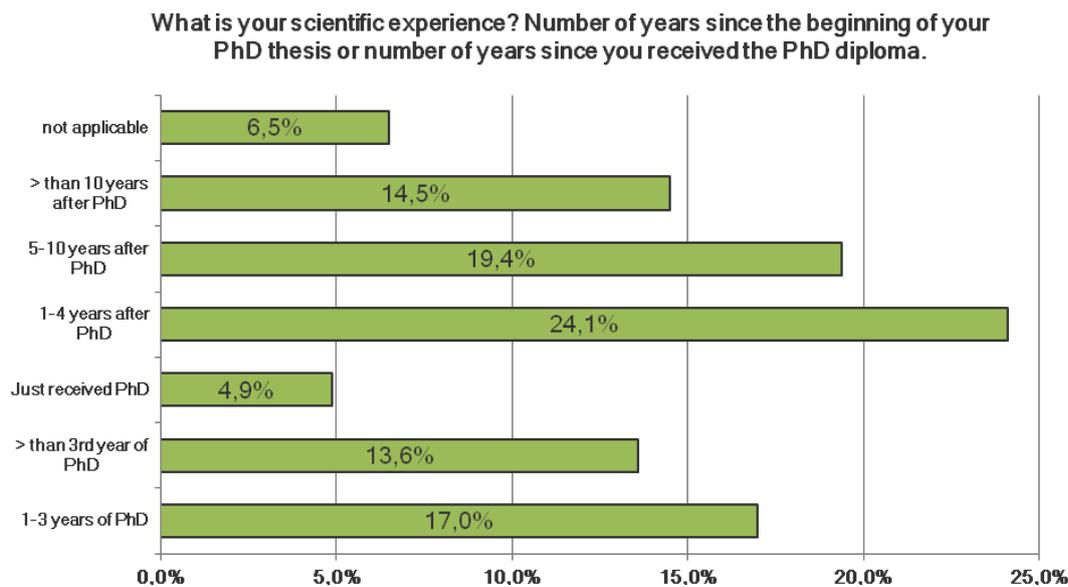
The majority of the participants of the survey worked in Social sciences and humanities (39.5%), followed by Mathematics, physical sciences, information and communication technology, engineering, universe and earth sciences (36.7%) and Life sciences (23.8%)

Most of the respondents (24.1%) had 1-4 years research experience after their PhD, followed by 19.4% of participants who had 5-10 years of research experience since obtaining their the PhD and 17% of participants who are 1-3 years into their PhD, see also Fig.1

Tab. 1 Scientific experience of the respondents

Scientific experience	Response percentage	Number of respondents
1-3 years of PhD	17.0%	55
> than 3rd year of PhD	13.6%	44
Just received PhD	4.9%	16
1-4 years after PhD	24.1%	78
5-10 years after PhD	19.4%	63
> than 10 years after PhD	14.5%	47
Not applicable	6.5%	21
Total		324

Fig. 1 Scientific experience of respondents to the AM2-4 survey



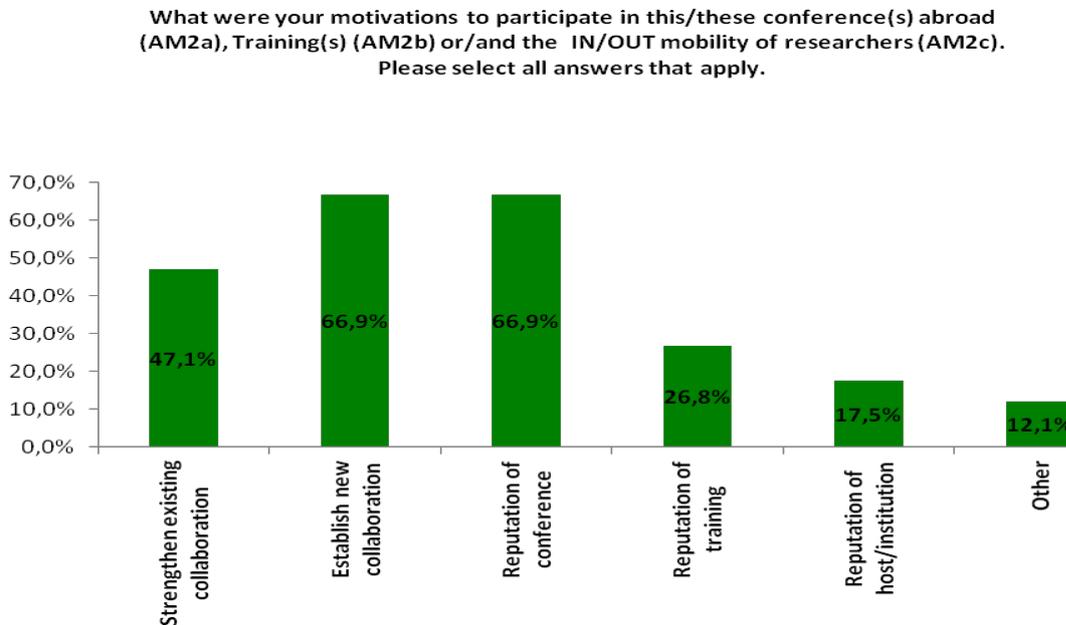
42.3% (137 respondents) of the participants in the survey were Luxembourg nationals, 57.7% are of other nationalities, and 67% of the respondents had received an AFR grant.

Between 2007 and 2010, 80.6% of the respondents (261) had applied at least once to an AM2 measure. Depending on the type of their activity, most of them, 66.9%, were either motivated to establish a new collaboration or by the reputation of the conference. For 47.1% of the respondents, the activity helped to strengthen an established collaboration. Some 26.8% were motivated to participate in the AM2 activity by the reputation of the training provided and 17.5% by the reputation of the host/institution.

Cross-experience with AM1

Twenty one of the participants (6.48%) in the AM2-4 survey had cross-experience with AM1 measures. Interestingly, all of these respondents had applied at least once to AM2, suggesting a certain awareness of societal challenges amongst applicants for training and mobility.

Fig. 2 Motivation of respondents to survey AM2-4 for AM2 activities



4.3.4. Semi-structured interviews

We conducted 9 semi-structured interviews with selected representatives (12 interviewees) of major stakeholder groups in the AMs.

Representatives of the:

Ministry for Higher Education and Research;

Public Institutions with a Research mission:

University of Luxembourg;

CRP Henri Tudor;

CRP Gabriel Lippmann;

CRP Santé;

CEPS/INSTEAD;

MNHN;

FNR officials;

FNR staff.

Issues discussed during the interviews were:

- Satisfaction of the respective institution with the AM funding scheme, e.g.:
- Efficiency and effectiveness of the AM funding scheme;
- Usefulness of AMs;
- Necessity of AMs;
- Understandability and transparency of the selection procedures;
- Strengths and weaknesses of the AM funding scheme;
- Need for new AMs, possibility to discontinue AMs;
- Suggestions for changes and improvements;
- Objectives that the AMs should fulfil for the respective institution;
- Specific needs;
- Crucial societal criteria.

Space was also given to the interviewees during the interviews to address their personal concerns and the concerns of their institution with regard to the AMs.

4.3.5. International context analyses

To account for international standards and trends, we analysed relevant rules of actions in other countries, evaluation reports and selected international publications on the subject and benchmarked the AM funding scheme with other (national) funding organisations in Europe and beyond.

4.3.6. Workshops

During the course of the evaluation we conducted a series of workshops and presentations to present and discuss the results of each step, to ensure transparency of each evaluation step, to take the expertise of the FNR into account, and to enable the FNR to start the development of an appropriate strategy for the AMs simultaneously.

Time chart and subjects of the workshops

May 4 th /5 th , 2011:	Kick-off workshop with FNR representatives;
June 25 th , 2011:	Discussion of survey design and questions with representatives of the FNR to give the FNR the option to include questions of their interest
September 14 th , 2011:	Presentation of the surveys to representatives of the FNR;
November 17 th , 2011:	Presentation of interview results and discussion with representatives of the FNR;
January 6 th /7 th , 2012:	Presentation of survey results and discussion with representatives of the FNR;
February 7 th , 2012:	Presentation of evaluation results and recommendations. Discussion of the development of a strategy for the development of the AMs with representatives of the FNR;
March 8 th , 2012:	Presentation of evaluation results and AM strategy of the FNR to FNR staff;
March 9 th , 2012:	Presentation and discussion of the evaluation report and AM strategy of the FNR to the Scientific Advisory Board of the FNR;
March 23 rd , 2012	Scheduled: Presentation and discussion of the evaluation report and AM strategy of the FNR to Administrative Board of the FNR.

5. The AM Funding Scheme

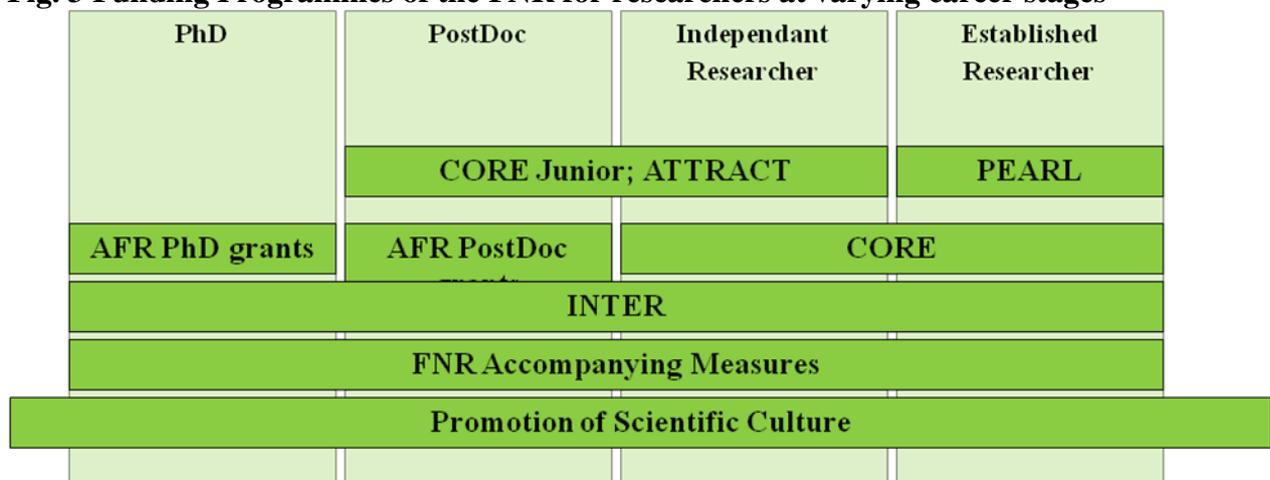
5.1. The AM funding scheme in context of the FNR funding programmes

The FNR supports research activities in Luxembourg through a broad range of funding tools with a budget amounting to €71,164 million for the period 2011 - 2013⁷.

With 3.7% (€6.3 million) the accompanying measures represent only a minor proportion of the total commitments. Even so, they are the most frequented funding scheme of the FNR, with 1,524 applications submitted during our evaluation period from 2007 to 2010.

Fig. 3 illustrates the embedment of AMs within the FNR's funding programmes as a whole.

Fig. 3 Funding Programmes of the FNR for researchers at varying career stages⁸



Core: Main research funding programme of the FNR with priority domains identified through the Foresight process and retained by the Government. Their thematic focus is:

- Innovation in services (IS);
- Sustainable resource management in Luxembourg (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, diversity and integration (ID).

Inter: Programme for the promotion of international and European cooperation.

Pearl: Excellence award to attract internationally recognised senior researchers in strategically important research domains to establish and transfer their research to Luxembourg.

⁷ FNR Performance Contract 2011 - 2013; FNR/CP2-11-13

⁸ Susanne Rick, Förderprogramme und Konzepte des Fond National da la Recherche (FNR) Luxembourg in der Balance zwischen Bürokratie und Ideenschmiede, p15 ff., in Forschungsförderung: Gratwanderung zwischen Ideenschmiede und Bürokratie?, 1/2011, Band IV, Schriftenreihe Hochschulen im Fokus, Hrsg. Britta Krahn, Dr. Christian Rietz, Dr. Wilma Simoleit.

AFR: PhD and Post-doc grants, provides funding for PhD and postdoctoral research training projects in Luxembourg and abroad.

Attract: Programme to attract and support outstanding young researchers in Luxembourg.

Promotion of Scientific Culture: Programme to make science and technology comprehensible for the general public and to reinforce the link between science and society.

Accompanying Measures (AMs): Consist of a wide range of smaller activities and measures. They provide funding for participation in scientific conferences abroad, promotion of scientific culture, training and mobility, the organisation of conferences in Luxembourg, and for publications.

5.2. The AM funding scheme in detail

At present, the FNR offers 4 major Accompanying Measures: AM1 “Promotion of Scientific Culture”, AM2 “Training and Mobility”, AM3 “Organisation of Scientific Conferences in Luxembourg” and AM4 “Scientific Publications”. AM2 “Training and Mobility” is further subdivided and offers a diversified portfolio of sub-programmes: AM2a “Active Participation in Conferences Abroad”; AM2b “Organisation of Trainings for Researchers in Luxembourg”, AM2b “Training of Researchers Abroad” and AM2c “IN Mobility of Researchers” as well as AM2c “OUT Mobility of Researchers”, adding up, in total, to 8 funding programmes.

.AM funding scheme

- AM1 - Promotion of Scientific Culture
- AM2 - Training and Mobility
 - AM2a - Active Participation in Scientific Conferences Abroad
 - AM2b - Training for Researchers
 - Training for Researchers Abroad
 - Trainings for Researchers in Luxembourg
 - AM2c - Mobility of Researchers
 - IN Mobility
 - OUT Mobility
- AM3 - Organisation of Scientific Conferences in Luxembourg
- AM4 - Scientific Publications (incl. PhD Theses)

5.3. Beneficiaries of the AM funding scheme

Tab. 2 Beneficiaries of the AM funding scheme

Doctoral student	PostDoc up to 4 years after completion of their PhD	Established researcher	Public institutions & bodies with a research mission	Non-profit organisations	Individuals, schools, others
AM1	AM1	AM1	AM1	AM1	AM1
AM2a	AM2a	AM2c In Mobility	AM2b Organisation of training in Luxembourg	AM3	
AM2b Training Abroad	AM2b Training Abroad	AM2c Out Mobility	AM3		
	AM4	AM4			

5.4. Evaluation procedures of the AMs - external review is the exception, not the rule

As an exception to the selection procedures for other funding programmes, that routinely involve an external review step, the FNR simplified the selection procedures for the huge number of applications, which is structured as follows, after submission:

- Internal administrative check based on AM eligibility and selection criteria
- AM applications > €7,500 Evaluation by an external expert
- AMs applications < €7,500 Evaluation by the FNR

Only exception in this process being the selection of AM2c applications, which were obligatory evaluated by external reviewers and cases of in doubt for all AMs.

Despite this simplification of the selection procedure, administrative processes and requirements such as final reports for conference participation, still demand a lot of time and effort from applicants and beneficiaries as well as from the FNR itself.

As of January 1st, 2011, the FNR excluded beneficiaries of their PhD/Postdoc Programme (AFR) from applying for funding under the measures AM2a and AM2b. They are now provided with lump sums to cover participation in conferences abroad and training courses. This certainly lightened the administrative load for managing the scheme to some extent, although it still left over 80% of all applications to the AM funding scheme.

Further allocations and simplifications of the scheme are necessary to reduce the time and effort for applicants, beneficiaries and the FNR and in the light of the FNR evaluation conducted in 2010 to ensure quality.

6. Quantitative and Qualitative Analyses of the Current AMs

6.1. Development of the AM funding scheme 2007 – 2010

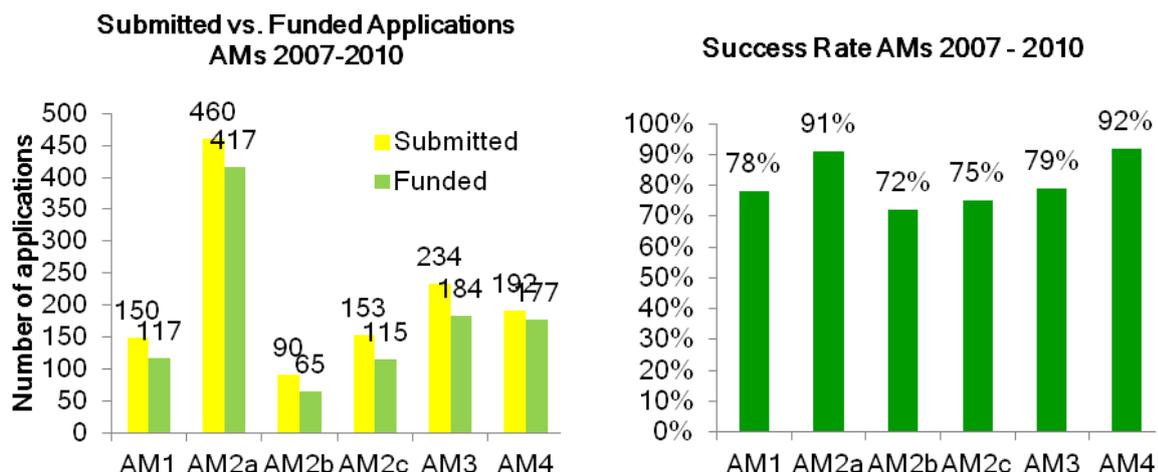
6.1.1. Application profiles and success rates

The AM funding scheme is the most frequented funding scheme of the FNR. Between 2007 and 2010, 1,524 applications for AMs were submitted to the FNR, out of which 1,151 activities were funded (75.5%).

As of January 1st, 2011, the FNR excluded beneficiaries of their PhD programme (AFR) from applying for funding under the measures AM2a and AM2b, as they are provided with lump sums to cover participation in conferences abroad and training courses. Disregarding AFR beneficiaries between 2007 and 2010 from the calculation, there were still 1,279 applications submitted by 665 applicants to the AM funding scheme, with an average success rate of 84%. The FNR funded 1,075 activities under this scheme, which accounted for a total funding volume of roughly €4.4 million (€4,383,514.80)*.

Most of the applications were submitted for the measure AM2a*⁹ (460 applications), followed by AM3 (234 applications), AM4 (192 applications), AM2c (153 applications), almost even with AM1 (150 applications), and AM2b*¹⁰ (90 applications). (See Fig. 2a and 2b).

Fig. 4 Overview of the development of the AM scheme 2007-2010



Taking AM1-4 altogether, the average success rate of applications to the AM scheme between 2007 and 2010 was 84%. The highest success rates having applications to AM4 (92%), almost

⁹ Numbers without AFR beneficiaries

¹⁰ Numbers without AFR beneficiaries

even with matched by the success rate of AM2a (91%). The lowest success rate was seen for applications to AM2b, at 72%. These are tremendously high success rates, seen for all of the programmes belonging to the AM funding scheme, which is rather unusual for applications for extramural research funding selected according to criteria of scientific quality¹¹.

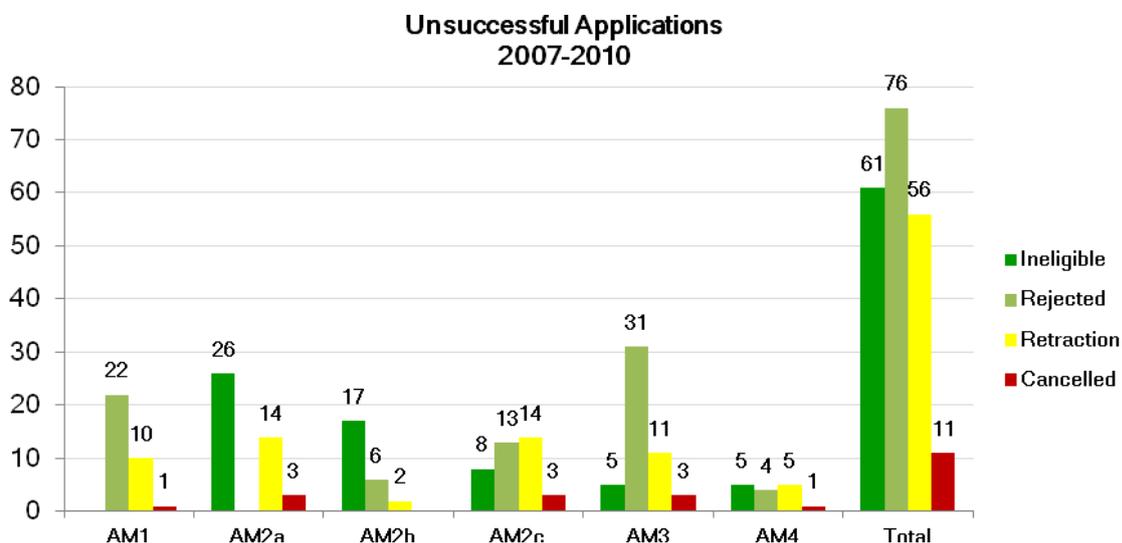
We investigated the reasons why applications were not successful, if at all. The FNR distinguishes the following categories of unsuccessful applications:

Tab. 3 Categories of unsuccessful applications

Rejected	The application was rejected by the FNR due to poor quality (expert decision, decision by the Board of Administration, etc.)
Ineligible	The application was not accepted for the selection procedure, for example, due to the activity, the applicant, the time of submission, etc. meaning that it was not eligible according to the guidelines
Retracted	The application was withdrawn by the applicant, e.g., the activity did not take place, funds were not used, etc.
Cancelled	The approved application was cancelled by the FNR after acceptance as requirements for approval by the FNR were not fulfilled.

Out of 204 unsuccessful applications (16% of all applications) there were:
 76 applications rejected by the FNR
 61 ineligible applications
 56 applications retracted by the applicant and
 11 applications cancelled by the FNR after initial approval.

Fig. 5 Unsuccessful applications by AM

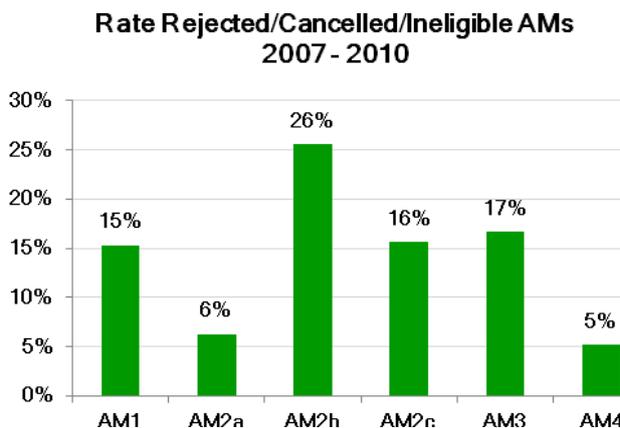


As we would have expected, the most common reason for an application being unsuccessful is rejection by the FNR due to poor quality. However considering the high number of applications, this amounts just to 37% of unsuccessful applications. Most of the rejected applications were applications to AM3, organisation of conferences in Luxembourg, followed by applications to AM1, “Promotion of Scientific Culture”. The next most common reason for unsuccessful applications, amounting to 30% of unsuccessful applications, were applications

¹¹ Forschungsförderung: Gratwanderung zwischen Ideenschmiede und Bürokratie, Sammelband Forschung, 2011, Ed. Britta Krahn, Dr. Christian Rietz, Dr. Wilma Simoleit

that were not eligible. Here we discovered through the surveys conducted that the most common reason for ineligibility of applications was due to submission deadlines being missed by the applicants, which the FNR had enforced. Retraction of approved applications was the second-to-last reason for applications being unsuccessful, in particular for AM2a and AM2c. In discussions of this point with FNR staff, we found out that this was primarily due to applicants not taking advantage of the planned trainings or of exchange scientists not starting the planned visit within the timeframe given. Not surprisingly, the last reason for applications being unsuccessful was cancellation by the FNR, either because the activity did not take place in an appropriate timeframe following approval or because the activity did not fulfil the approval requirements.

Fig. 6 Percentage of unsuccessful applications by AM

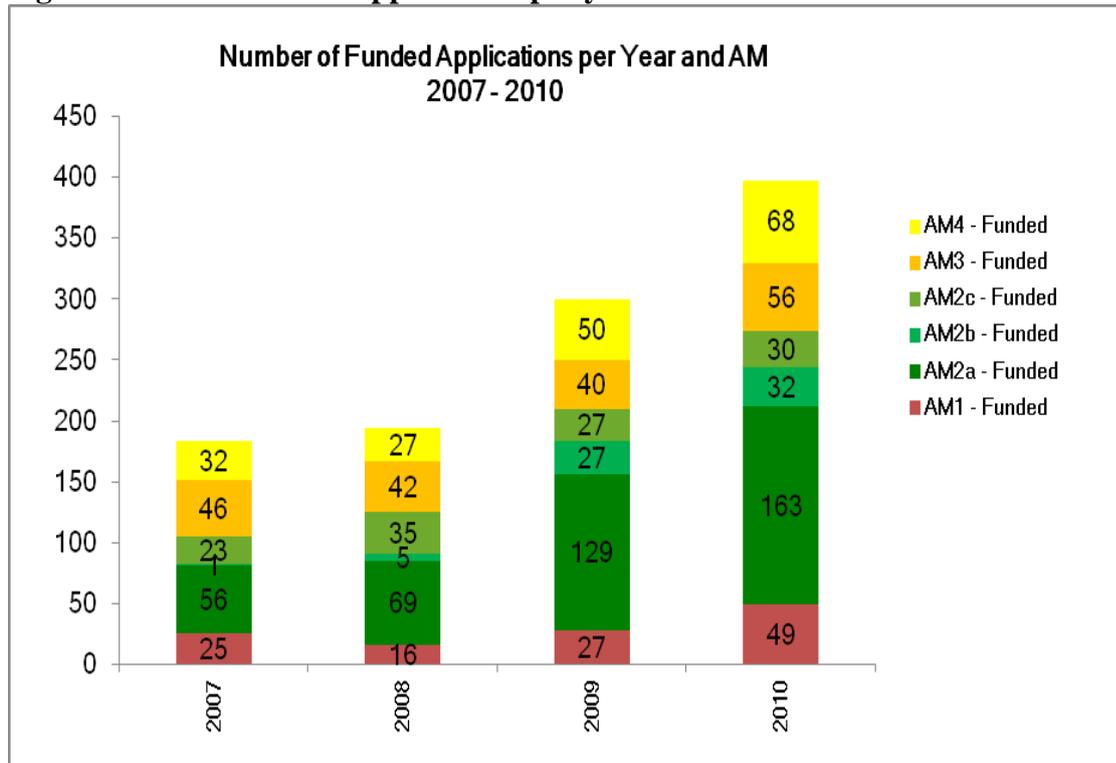


The highest proportion of unsuccessful applications, accounting for slightly more than ¼ of the applications, were seen for AM2b, training of young researchers. As we discovered, especially from the surveys, due to a high percentage of ineligible applications (see also the detailed analysis of AM2b). 17% of the AM3 applications, the second highest proportion of unsuccessful applications, were primarily unsuccessful due to rejection by the FNR. In interviews as well as from the surveys we discovered that there was a high degree of insecurity amongst applicants concerning the eligibility and selection criteria, resulting in conference concepts which the FNR did not consider worth funding. Some 16% of all applications to AM2c were unsuccessful. The main reason here had been retraction of approved applications by the applicants (see also detailed analysis of AM2c). On average, 15% of AM1 applications were unsuccessful. Here we found the main reason was rejection of the application by the FNR due to poor quality. Last, in terms of unsuccessful applications, are AM2a and AM4, with 6% and 5% respectively, the most common reason for unsuccessful applications to these two measures once again being ineligibility.

We also analysed the development of funded AMs between 2007 and 2010 and whether there were any differences between the AMs.

As a reflection of the increase of students in Luxembourg who are eligible to apply and the growing research community in general, the total number of applications for AM1, AM2a, AM2b, AM3 and AM4 increased. The least recognisable growth trend is seen for AM2c, in and out mobility of researchers, hovering at around 29 exchanges per year. This was confirmed by further analysis of AM2c and could be put down to differences between the two types of mobility (see AM2c for detailed results).

Fig. 7 Number of funded applications per year and AM



In general, ignoring minor fluctuations, approved applications to AMs increased constantly between 2007 and 2010.

6.1.1.1. Gender specificities

We investigated whether there are gender specificities.

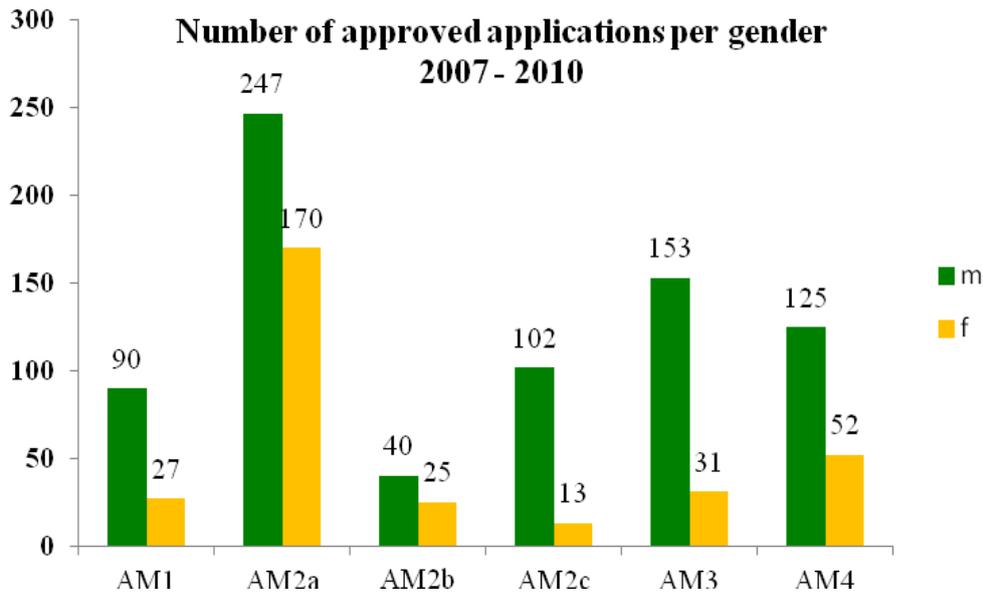
Tab. 4 Application rates by gender and AM

Number of applications by	AM1	AM2a	AM2b	AM2c	AM3	AM4	Total
Male applicants	116	270	55	133	195	135	904
Female applicants	34	190	35	20	39	57	375
% female	22.7	41.3	38.9	13.1	16.7	29.7	29.3

About $\frac{1}{3}$ of all AM applicants are female and $\frac{2}{3}$ are male.

There are striking differences of applications rates by gender between AMs. The highest proportion of female applicants (41.3%) applied to the AM2a measure, while the highest proportion of male applicants, 86.9% applied to AM2c. The proportion of male applicants to AM3 was similarly high, at 83.3%. However, this might, to a large extent, reflect the male-dominated occupancy of leading positions in the research structure rather than sex discrimination, as it is quite often the head of an institution or department rather than the candidates themselves who apply for the mobility measure under AM2c and AM3 applicants are the representatives of research institutions.

Fig. 8 Number of approved applications by AM and gender



Tab. 5 Similar success rates for each gender for all AMs except AM2c

Male	AM1	AM2a	AM2b	AM2c	AM3	AM4	Total	Success rate
Submitted	116	270	55	133	195	135	904	
Funded	90	247	40	102	153	125	757	84%
Female	AM1	AM2a	AM2b	AM2c	AM3	AM4	Total	Success rate
Submitted	34	190	35	20	39	57	375	
Funded	27	170	25	13	31	52	318	85%

Looking at the average success rate of applications from female and male applicants, there is no obvious difference, on average, with a success rate of 84% for male and 85% for female applicants. When looked at in detail, however, this holds true for all AMs except for AM2c, for which the success rate of female applicants tends to be lower than the success rate of male applicants. This is a phenomenon that the FNR should keep an eye on.

Tab. 6 Success rates by gender

	M	F	Total	Success rate (M)	Success rate (F)
AM1	90	27	117	78%	79%
AM2a	247	170	417	91%	89%
AM2b	40	25	65	73%	71%
AM2c	102	13	115	77%	65%
AM3	153	31	184	78%	79%
AM4	125	52	177	93%	91%
Total	757	318	1,075	84%	85%

6.1.1.2. Domain specificities

Similar success rates for each priority domain

In the period 2007 – 2010, most of the applications funded were in the domain SH*, followed by PE* and LS*¹².

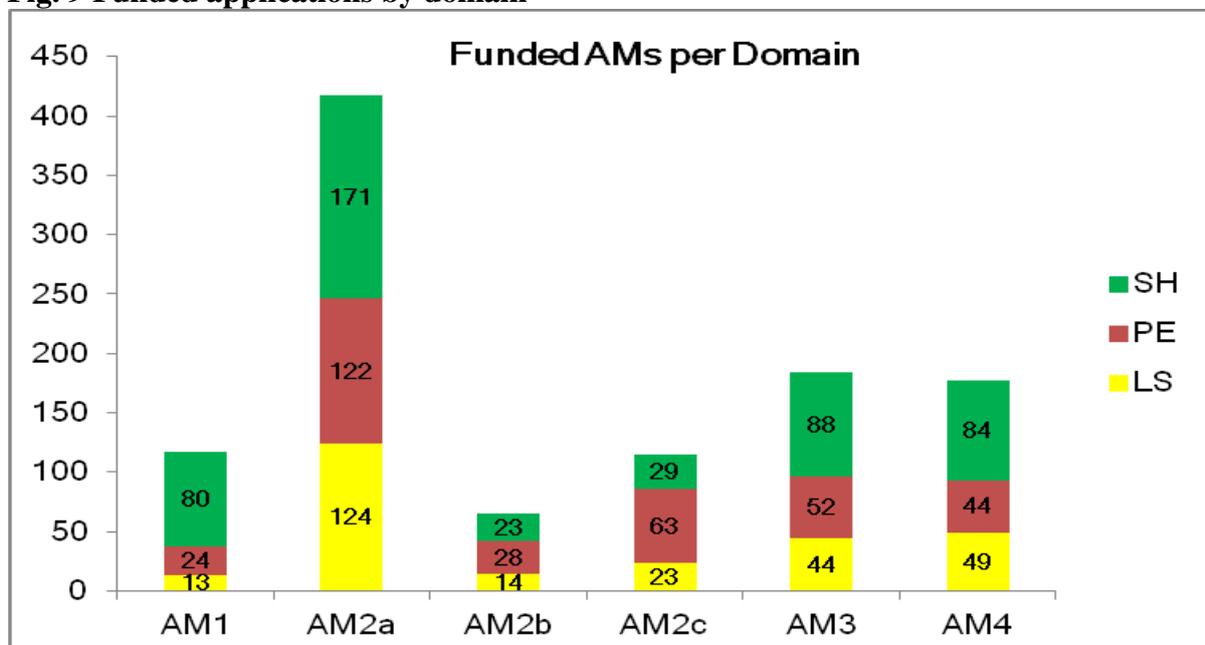
Tab. 7 Success rates by domain

2007 - 2010	Funded	Submitted	Success rate
LS	267	311	86%
PE	333	396	84%
SH	475	572	83%
Total	1,075	1,279	84%

Looking at the success rates of applications to the 3 priority domains, they are, on average, similar, with success rates of 83% in SH, 84% in PE and 86% in LS, respectively.

A differentiated look at applications approved by AM and domain, however, reveals some differences. Most approvals in AM1, AM2a, AM3 and AM4 are in SH, while PE takes the lead in AM2b and AM2c.

Fig. 9 Funded applications by domain

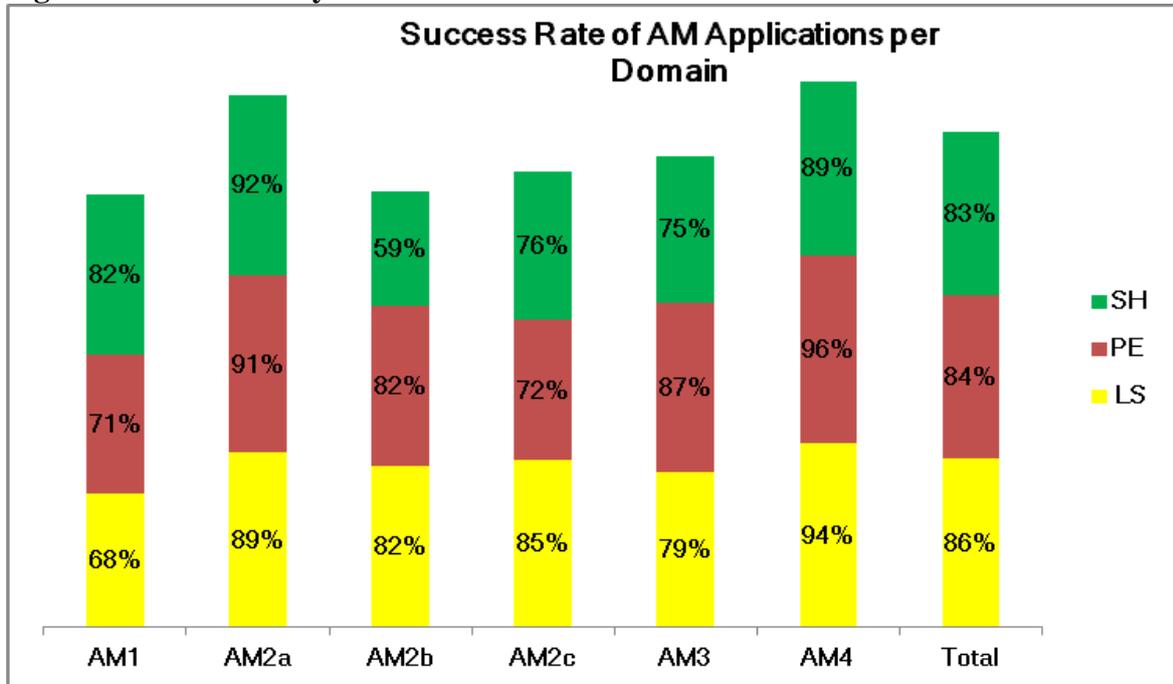


The picture changes when we look at the success rates by AM and domain.

¹² *LS = Life sciences, PE = Mathematics, physical sciences, information and communication technology, engineering, universe and earth sciences, SH = Social sciences and humanities¹²

Applications in the field of SH are most successful for AM2a, followed closely by AM4 and AM1. They are least successful for AM2b. In PE, the differences in the success rates of the various AMs are not as pronounced, varying between 80% and 96% for AM2a, AM2b and AM3. In this domain, applications for AM1 are the least successful and applications for AM4 are the most successful, at 96%. A similar situation is seen for applications in the LS domain, with highest success rates seen once again for AM4 and the lowest success rate for AM1.

Fig. 10 Success rates by domain and AM



6.1.1.3. Application profiles of institutions/applicants

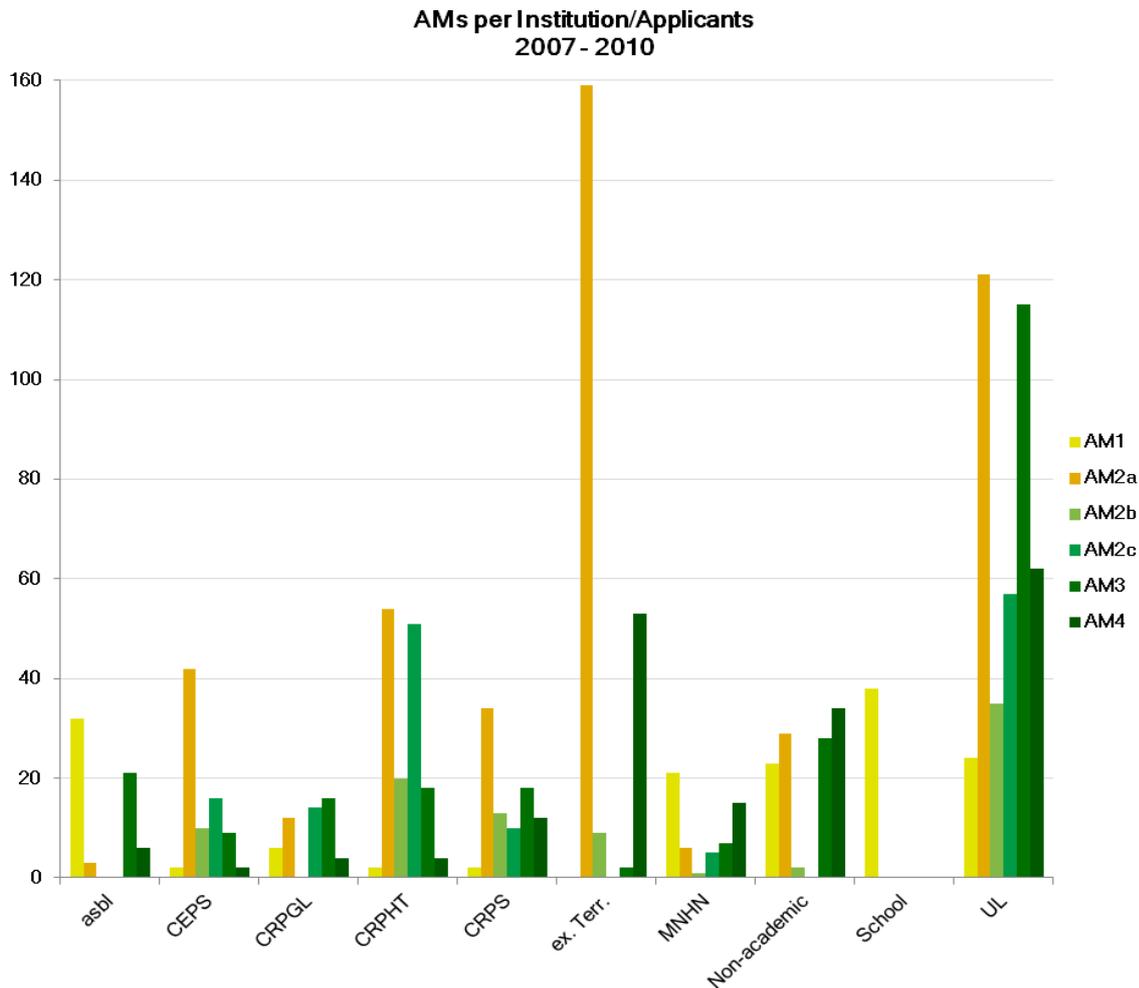
We analysed the application profiles of institutions/applicants.

When we look at AM1, the only measure schools are eligible to apply for, schools submit the most applications, closely followed by non-profit associations, the University of Luxembourg and the Musée National d'histoire naturelle.

52.3% of the applications for AM2a, active participation in conferences abroad, are submitted by Luxembourg citizens ex territory, working outside Luxembourg, followed by 26.3% of applications from the University of Luxembourg. Training of researchers, AM2b, and mobility of researchers, AM2c, were applied for most by the University of Luxembourg, followed by applications from CRP Henry Tudor. The most applications for AM3, 49.2%, came from the University of Luxembourg, followed by non-academics, who accounted for 12% of these applications, and 9% from non-profit organisations. Applications for AM4 were predominantly submitted by applicants from the University of Luxembourg (32.9%) and Luxembourg citizens ex territory (27.6%).

Top 4 of all applications to for AMs come 1st, with 32.37%, from the University of Luxembourg, 2nd, with 17.44%, from Luxembourg citizens ex territory, 3rd, with 11.65%, from CRP Henry Tudor, and 4th, with 9.1% from non-academic institutions/applicants.

Fig. 11 Application profiles of institutions/applicants



6.1.1.4. Frequency of applications by AM

Where possible, applicants tend to apply more than once a year for funding under a certain measure.

Tab. 8 Frequency of applications per year and by measure

2007	AM1	AM2a	AM2b	AM2c	AM3	AM4
Applications submitted	30	56	1	27	54	35
Applicants	17	56	1	16	47	35

2008	AM1	AM2a	AM2b	AM2c	AM3	AM4
Applications submitted	26	72	6	52	61	30
Applicants	17	72	6	26	50	30

2009	AM1	AM2a	AM2b	AM2c	AM3	AM4
Applications submitted	37	146	31	33	56	54
Applicants	31	146	31	22	51	54

2010	AM1	AM2a	AM2b	AM2c	AM3	AM4
Applications submitted	57	186	52	41	63	73
Applicants	48	186	52	36	55	52

Applicants tend to apply for a measure more than once a year when permitted by the guidelines. This can be seen for AM1, AM2c, AM3 and AM4. Applications for AM2a and AM2b may only be submitted once a year.

6.1.2. Efficiency of the FNR management

6.1.2.1. Time and effort for the AM management

Tab. 9 Time estimates by phase of funding process

Stages of the funding process	Reception	Evaluation	Reporting	Management of funds	Others (telephone calls, e-mails, information, etc.)	Total
AM1	5 min.	5 min. (FNR) + 60 min. (expert)	30 min.+10 min.	40 min.	10 min.	160 min.
AM2a	10 min.	6 min.	22 min.	22 min.	10 min.	70 min.
AM2b	15 min.	11 min.	22 min.	22 min.	10 min.	80 min.
AM2c	5 min.	5 min. (FNR) + 60 min. (expert)	30 min.+10 min.	40 min.	10 min.	160 min.
AM3	5 min.	5 min. (FNR) + 60 min. (expert)	30 min.+10 min.	40 min.	10 min.	160 min.
AM4	15 min.	20 min.	7 min.	8 min.	10 min.	60 min.

Even if we ignore the time external reviewers might spend on the evaluation of an application, which is difficult to estimate by FNR staff, the most time and effort is spent on AM1, AM2c and AM3, reflecting the high complexity of these activities.

Predicted reduction in the FNR workload as a result of the exemption of AFR beneficiaries from AM2a and AM2b

As of 2011, AFR beneficiaries are no longer eligible to apply for AM2a and AM2b. Although this exemption was introduced after the time frame of this evaluation, we were interested estimating the anticipated reduction in the administrative workload. Tab 10. shows the

number of beneficiaries of AM2a and AM2b in 2009 and 2010. While approx. $\frac{1}{3}$ of the beneficiaries of AM2a are AFR beneficiaries, almost 90% of the AM2b beneficiaries are also AFR beneficiaries, leading us to expect a reduction in applications to all AMs of approx. 10% to 20%.

Tab. 10 Proportion of AFR beneficiaries of AM2a and AM2b in 2009 and 2010

Year	AM2a	%	AM2b	%
2009 funded	129		27	
2009 funded AFR	42	32	24	89
2010 funded	163		32	
2010 funded AFR	60	37	25	78

6.1.2.2. Financial contribution and efficiency of budget management by the FNR

In accordance with the developing research system in Luxembourg and the growing numbers of applications, the FNR's total budget for AMs, as well as for the individual measures has grown steadily, with total budgets for AMs of €94,000 in 2007, €93,000 in 2008, €1 million in 2009 and €1.5 million in 2010.

Tab. 11 Annual amounts spent by the FNR per AM

Amounts paid per year	2007	2008	2009	2010	Total
AM1	€70,319.87	€33,614.78	€72,793.93	€12,571.82	€789,300.40
AM2a	€6,675.13	€79,664.72	€160,420.91	€237,303.99	€534,064.75
AM2b	€1,807.03	€4,983.07	€8,904.58	€4,129.55	€9,824.23
AM2c	€63,413.27	€24,868.43	€90,535.92	€52,548.02	€1,131,365.64
AM3	€43,654.80	€83,038.59	€65,139.57	€457,102.11	€1,348,935.07
AM4	€7,901.04	€6,777.02	€57,611.27	€197,735.38	€180,024.71
Total	€93,771.14	€92,946.61	€1,085,406.18	€1,511,390.87	€4,383,514.80

Comparing the development of the financial contribution by the FNR for each AM from 2007 to 2010, contributions for all AMs increased steadily, ignoring minor fluctuations, with one exception: The budget for AM2c. This was most probably due to the lack of a significant

increase in the number of applications, revealing a tendency to decrease in proportion, in comparison to the other measures.

6.1.2.3. Cost coverage of actual costs of AM activities by FNR funding

The percentage of costs of an AM activity that are covered by FNR funding is quite different and varies between 26.4% (for AM1) and 83.4% (for AM2c).

Tab. 12 Cost coverage by FNR funding

AM	Total cost of activity*	Amount paid by the FNR	% cost coverage
AM1	€524,460.98	€789,300.40	31.27%
AM2a	€65,362.79	€34,064.75	80.27%
AM2b	€143,968.01	€9,824.23	69.34%
AM2c	€1,357,065.96	€1,131,365.64	83.37%
AM3	€1,115,959.27	€1,348,935.07	26.37%
AM4	€1,122,781.80	€480,024.71	42.75%
Total	€10,929,598.81	€4,383,514.80	40.11%

*Costs determined by the applicants

Cost coverage for activities funded by AM2a (80.3%), AM2c (83.4%) and AM2b (69.3%) is pretty high, when compared to the coverage rates for AM1 (31.3%), AM3 (26.4%) and AM4 (42.75%). These differences are due, in part, to the different funding regulations, as AM3 and AM1, in particular, are considered to be co-funding models, in which the applicants are expected to cover a significant proportion of the actual costs themselves or from other sources.

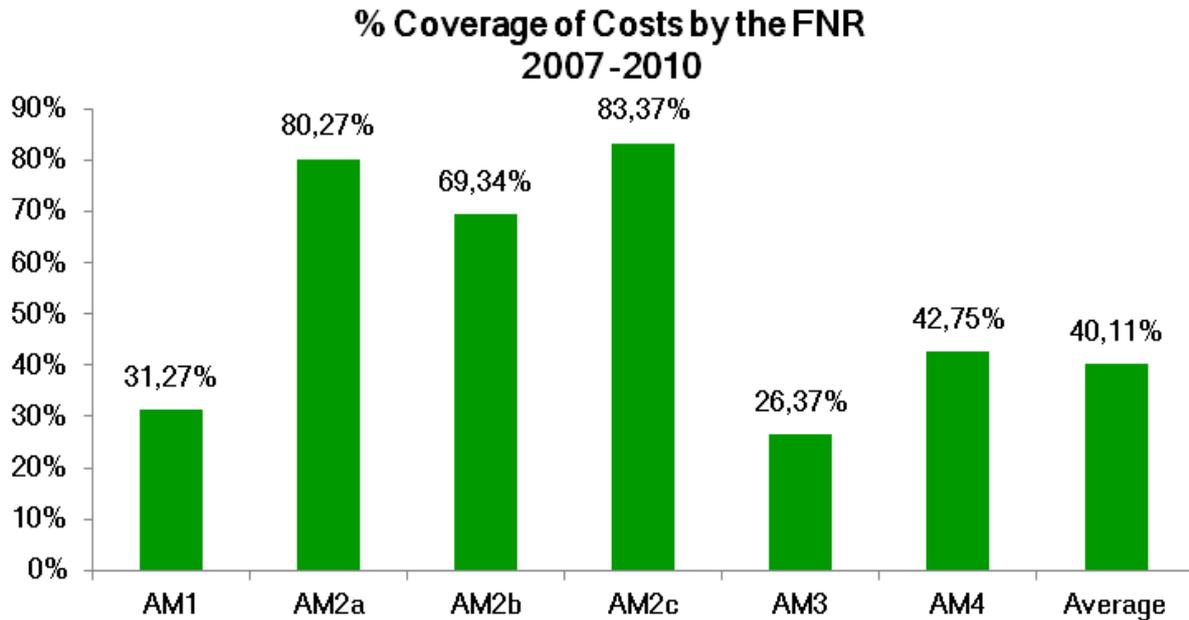
For AM1 and AM3, however, we do consider the amount of funding to be extremely low and recommend increasing the subsidies by the expansion of the eligible costs, e.g., to include lecture fees for speakers (see below for detailed analysis).

These differences in cost coverage rates between the AMs are partly due, for AM4 in particular, to the provision of one maximum lump sum for a variety of different activities, the cost of which varies significantly (see also AM4 for a detailed analysis). For AM2a and AM2c, 80% cost coverage is within an acceptable range for extramural funding¹³. Within this group, the cost coverage rate of 69.4% for ‘training of researchers’ and ‘summer schools’ (AM2b) seems rather low and should be observed, but might reflect insecurities and ambiguities in the reimbursement and eligibility rules of the relatively new sub-tool ‘summer schools’.

¹³ Forschungsmanagement: Fördermittel einwerben und verwalten, 2009, Hrsg. Britta Krahn, Dr. Christian Rietz, Dr. Wilma Simoleit

Analysis of the development of cost coverage over the years revealed no significant deviation from these trends. Fig. 12 and Tab.13

Fig. 12 Cost coverage by FNR funding



Tab. 13 Development of cost coverage by FNR funding from 2007 to 2010

AM	% cost coverage by year				
	2007	2008	2009	2010	Average
AM1	31.54	41.85	21.48	36.31	31.27%
AM2a	73.35	74.74	75.36	88.34	80.27%
AM2b	82.14	94.78	70.53	66.54	69.34%
AM2c	87.15	72.27	91.01	88.28	83.37%
AM3	29.49	25.14	23.26	27.13	26.37%
AM4	39.37	30.39	37.06	59.80	42.75%
Total	40.00	40.11	36.71	43.03	40.11%

6.1.2.4. Efficiency of budget management by the FNR

We investigated the efficiency of budget management of the FNR by different perspectives in detail. First we wanted to know, if there is a divergence between the budget granted and the actual amount later paid by the FNR.

Tab. 14 Efficiency of budget management by the FNR

AM	Total cost*	Requested budget*	Budget* granted	Amount paid by the FNR	% of budget granted
AM1	2,524,460.98	1,097,041.27	851,448	789,300.4	93%
AM2a	665,362.79	623,434.26	834,000	534,064.75	64%
AM2b	143,968.01	111,941.65	154,000	99,824.23	65%
AM2c	1,357,065.96	1,281,442.96	1,223,762	1,131,365.64	92%
AM3	5,115,959.27	2,577,421.77	1,470,254	1,348,935.07	92%
AM4	1,122,781.80	503,461.05	717,160	480,024.71	67%
Total	10,929,598.81	6,194,742.96	5,250,624	4,383,514.8	83%

**Total cost = Overall cost of the activity, determined by the applicants. Requested budget = Budget requested by the applicant. Budget granted = Budget granted by the FNR, % of budget granted = Actual amount paid by the FNR as a proportion of the budget granted for this activity*

All values are shown in €

In our statistic analysis of the period 2007 to 2010 we found that granted budget by the FNR differed by 17%, on average, from the actual payment taking all of the current AMs altogether.

Differences are apparent between individual AMs. For AM1, AM2c and AM3 the FNR does fairly well (7%-8% difference between the budget granted and actual payments). For AM2a, AM2b and AM4 the gap between the budget granted the amount paid exceeded 30%. Considering the differences in reimbursement between AMs, this is not surprising. While the FNR takes the estimated cost of AM1, AM2c and AM3 activities as the basis for calculating the amount granted in the approvals, for AM2a, AM2b and AM4 the FNR initially grants lump sums and only later determines the final payment based on invoices for the actual costs. For each of these measures, AM2a, AM2b and AM4, the accuracy of the budget granted thus depends, to a high degree, on the amount of the lump sums granted (see also AM2a, AM2b and AM4 for detailed further analysis).

6.1.2.5. FNR estimates of annual budget requirements

We also investigated how well the FNR estimated the budget they would need to cover the actual payments for each AM in the period 2007 to 2010.

The FNR estimated the budget requirements best for AM2a, with just a minor divergence of 1.5%. The budget estimates for AM1, AM2b, AM3 and AM4 are also pretty good, with divergences of 11.3%, 11.9%, 15.2% and 13.2% respectively. These divergences may reflect, in part, the unpredictable nature of the types of activities conducted under AM1, AM2b and AM3 (type of conference, type of training course or type of an AM1 event) that funding is applied for, e.g., if a conference with 20 or with 100 participants is planned. For AM4, they are a reflection of the high complexity of this measure, as AM4 covers a wide range of types of publication, ranging from PhD theses to monographs with the proportion of costs covered by the lump sum granted by the FNR varying.

It was, however striking to see the divergence of over 40% between the estimated budget and actual payments for AM2c. This may be due, in part, to the relatively high withdrawal rates of approved applications by the applicants, which are not foreseeable by the FNR. However, this can only be part of the story, as withdrawal only account for 9% of all AM2c applications. Here the FNR will have to pay close attention in the future to improving the planning of the budget for AM2c.

Tab. 15 Divergence estimated budget and actual payment in the period 2007 - 2010

AM	AM1	AM2a	AM2b	AM2c	AM3	AM4
Budget estimated by the FNR	€90,000.00	€26,000.00	€9,200.00	€1,910,000.00	€1,590,000.00	424,000.00
Actual payment made by the FNR	€789,300.40	€34,064.75	€9,824.23	€1,131,365.64	€1,348,935.07	€480,024.71
Difference	€100,699.60	-€8,064.75	-€10,624.23	€778,634.36	€241,064.93	-€56,024.71
Divergence	11.31%	-1.53%	-11.91%	40.77%	15.16%	-13.21%

Finally we also investigated the divergence between estimated and granted budget by the FNR.

Tab. 16 Divergence between estimated and granted budget in the period 2007 - 2010

AM	AM1	AM2a	AM2b	AM2c	AM3	AM4
Budget estimated by the FNR	€90 000	€26 000	€9 200	€1 910 000	€1 590 000	424 000
Budget granted by the FNR	€851 448	€34 000	€154 000	€1 223 762	€1 470 254	€480 024
Difference	€8 552	-€308 000	-€64 800	€686 238	€119 746	-€56,024
Divergence	4.3%	-36,9%	-42%	35,9%	7%	-11,7%

Analyses of the budget management of the FNR reveals in large parts dependency on the funding model, leading to low divergences in co-funding models like AM1 and AM3, and to high divergences in direct cost models, dependent on the amount of lump sum granted. We rather prefer therefore analyses of the divergences between planned budget and actual payment as indicator for the efficiency of the budget management.

6.1.3. Satisfaction of stakeholders with the AM funding scheme

As an indicator of differences in the level of awareness of problems as well as the need for and urgency of changes, we interviewed major stakeholders about their overall satisfaction with the current AM funding scheme. On average, representatives of the 4CUs, the University of Luxembourg and the MNHN were about 75% satisfied (highest value 80%; lowest value 60%) with the AM funding scheme, compared to an average of 60% satisfaction amongst FNR representatives (highest value 75%; lowest value 30%).

Even so, these are no hard facts, differences in perception are symptomatic of the current situation. While the FNR has realized a switch in their function, from originally providing the foundation for research and a research system in Luxembourg, to the promotion of scientific quality and international competitiveness in the current follow-up phase, the research community is not yet fully aware of this situation.

6.1.4. Importance of AMs to major stakeholders and the FNR

To get an overall impression of the importance of AMs to major stakeholders and FNR representatives, we asked interviewees to rate the importance of AMs according to their own individual criteria. Once again, this does not, of course give hard facts to evaluate, but rather reveals tendencies in perception. Fig 13.

To get an overall impression of the importance of AMs to major stakeholders and FNR representatives, we asked interviewees to rate the importance of AMs according to their own individual criteria. Once again, this does not, of course give hard facts, but rather reveals tendencies in perception.

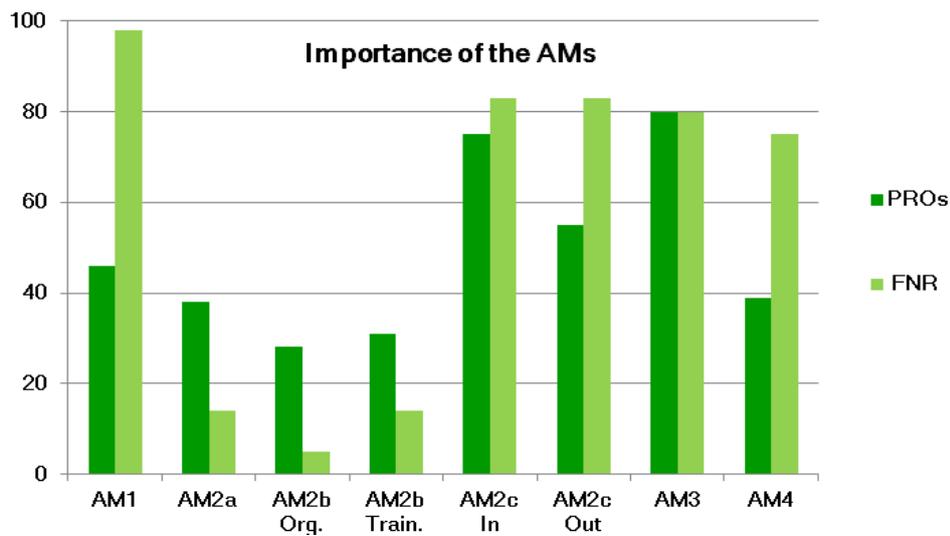
When compared by tendency, PROs and the FNR representatives rated AM2a and AM2b as being significantly less important than the other measures. Even so, the representatives of the PROs perceived them as being slightly more important than the FNR representatives did. At first sight, this might seem quite surprising, considering that 42.8% of all AM approvals support active participation in conferences abroad (AM2a). However, one may argue that, firstly, our interviewees were representatives of institutions inside Luxembourg, while the majority of the beneficiaries of AM2a are Luxembourg citizens working outside Luxembourg, and secondly, for AFR beneficiaries these costs are now covered by AFR approvals, further reducing the importance of AM2a in general.

The PROs and the FNR representatives gave identical ratings for AM3, as being of almost equal importance to AM2c IN mobility. Interestingly, the importance of AM2c In and OUT mobility was rated as being of equal importance by the FNR representatives, while the AM2c OUT measure was considered to be slightly less important by the PROs, also reflecting the lower number of applications for this measure.

Significant differences in importance were revealed for AM1 and AM4. For AM4 the interviewees explained that their lower rating of the importance of this measure was partly due to the existence of other budgets at the research institutions provided to cover these financial needs, making them less dependent on funding from the FNR.

As for the lower rating of the importance of AM1 for the PROs, this might be due, in part, to the composition of the interviewee population, as most interviewees represented organisations with a strong focus on research rather than on interactions with the general public. However, it may also be indicative of a lower degree of awareness amongst the representatives of PROs about the need to maintain dialogue with the general public about research and its rapid development to provide a beneficial foundation for the growing needs of the research system in the Luxembourg society. Here, the FNR should pay close attention to fostering further developments and increasing in the level of awareness in the scientific community as well as providing adequate funding and funding tools for the initiation and the conduct of such activities.

Fig. 13 Comparison of the importance of AMs to stakeholders and FNR representatives



6.2. The Funding Process

6.2.1. Application

Fig. 14 Stages of the funding process



Going through the funding process (Fig. 14) from the point of view of applicants, they first need to collect sufficient information about the funding opportunities and which funding of the FNR's tools is best suited to their needs. The main criteria here are easy access to information, comprehensive information and clarity of the information.

The FNR offers a portfolio of sources of information, starting with the FNR website, brochures, information events and so forth. We wanted to know, which sources of information applicants prefer to use and how they rate the quality of the information they can get from these sources according to the criteria mentioned above. To find out whether there are differences in the communication behaviour of more research-driven applicants and those that are more oriented towards interactions with societal needs, we asked both groups, AM1 applicants and AM2-4 applicants, separately.

6.2.2. Communication/information preferences

First we wanted to know how potential applicants find out about AM funding.

The main source of information for respondents with experience in AM2-4 is the FNR website, followed by word-of-mouth from colleagues and the head of the department/supervisor.

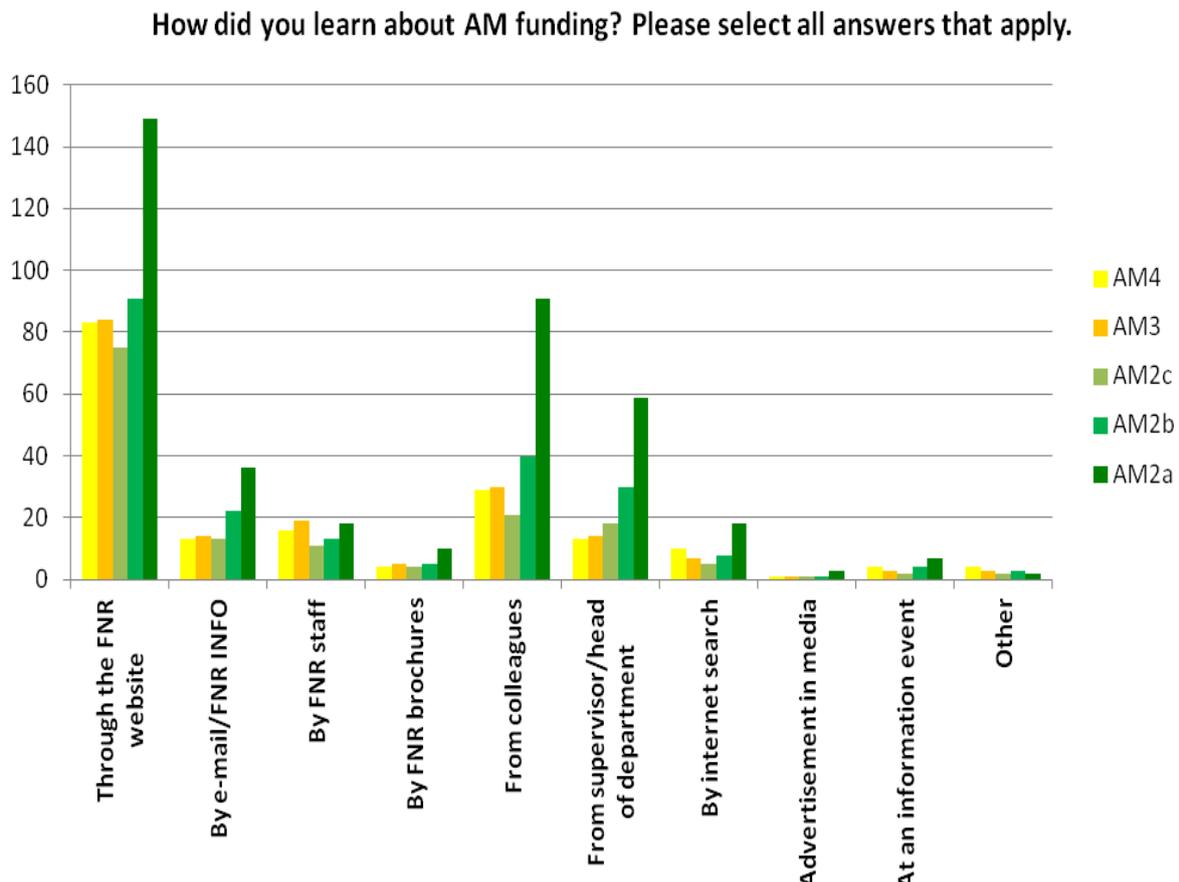
The picture is different for respondents with AM1 experience. The main source of information for AM1 applicants are their colleagues (45%), followed by FNR staff (35%). The FNR website is only 3rd place, being reported as their source of information by only 27.5% of AM1 participant. This suggests that AM1 applicants prefer oral communication to communication in writing.

Tab. 17 Source of information

AM2-4		AM1	
Answer options	Response in %	Answer options	Response in %
From the FNR website	36.86	From colleagues	45.0
From colleagues	23.72	By FNR staff	35.0
From supervisor/head of department	14.68	From the FNR website	27.5
By e-mail/FNR INFO	8.70	From FNR brochures	10.0
By FNR staff	6.14	Mr. Science	7.5
By internet search	4.47	At an event	7.5
From FNR brochures	2.56	From supervisor/head of department	5.0
At an information event	1.54	By e-mail/FNR INFO	2.5
Other	0.85		
Advertisement in media	0.51		

For AM2-4 we looked in further detail to see whether there were any differences in the source of information depending on the type of measure.

Fig. 15 Source of information by AM (AM2-4)



Looking in detail, the FNR website was the main source of information for applicants to each of the AMs. Obtaining information from FNR staff ranked 5th here for all AM2 applicants, while it came 3rd for AM3 and AM4 applicants. This slightly higher importance of FNR staff as a source of information for AM 3 and AM4 applicants might be indicative of the higher complexity of these measures and a greater demand to get additional information before applying than is available from other sources.

We also wanted to know which information that the applicants received had been most helpful to them.

Fig. 16 Usefulness of sources of information for AM2-4 applicants

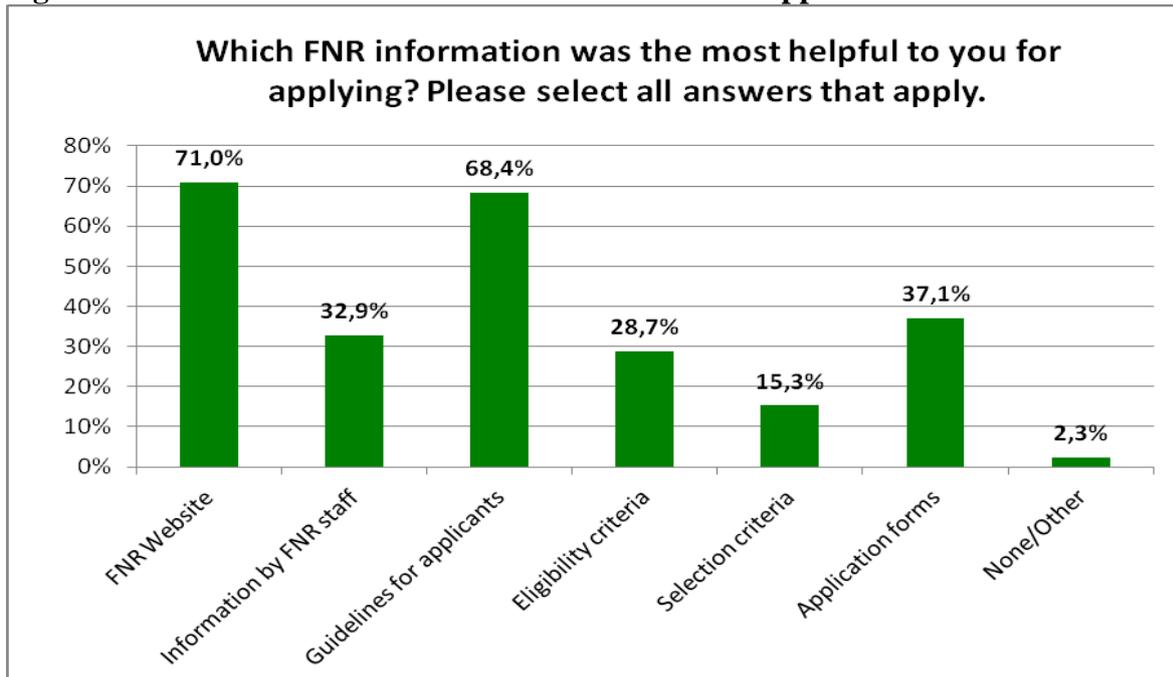
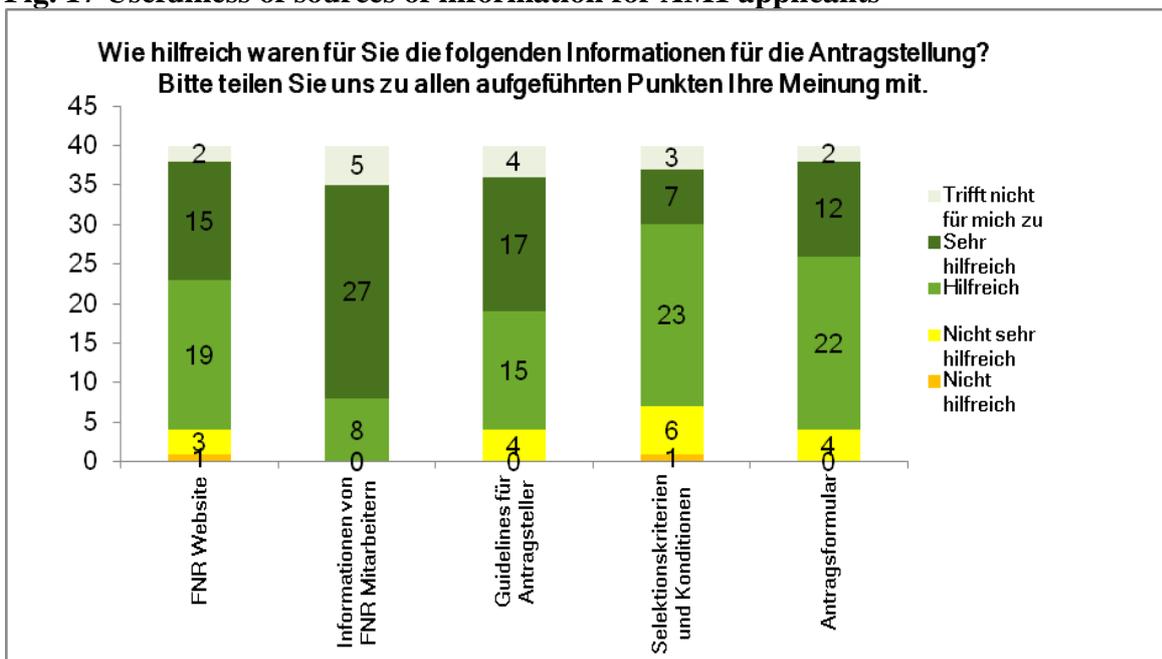


Fig. 17 Usefulness of sources of information for AM1 applicants



Here again, differences between AM1 applicants and AM2-4 applicants followed the previous trend. While AM1 applicants considered information by the FNR staff to be the most helpful, this information ranked only 4th for AM2-4 applicants, again reflecting the habit of AM2-4 applicants not to seek information first-hand from FNR staff, but rather to look for sufficient information from other sources like the website, guidelines for applicants and application forms.

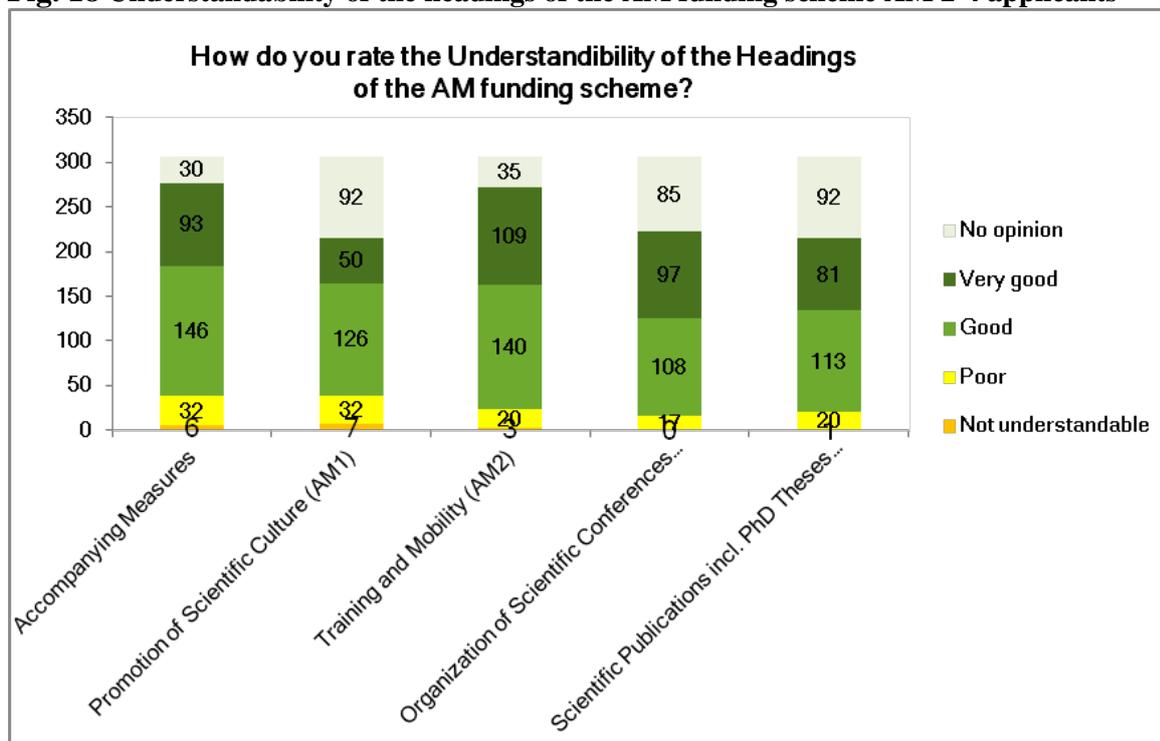
Accordingly, applicants experienced in AM1 rated information provided by the FNR staff as the most helpful, followed by the guidelines for applications and, in 3rd place, the FNR website. In conclusion, this is an indication for the FNR that there is a need to adapt its communication strategies to suit these different application groups and to stress verbal communication as well as to seek personal contact, in particular with AM1 applicants.

Information before applying – looking for the right funding programme!

In order to find the right information for targeted funding, applicants are offered headings of the overall funding scheme as well as of different sub-programmes. These are intended to act as guides to direct potential applicants through the FNR’s funding portfolio.

We analysed how understandable these headings are and how helpful they were for finding the appropriate funding programme.

Fig. 18 Understandability of the headings of the AM funding scheme AM 2-4 applicants



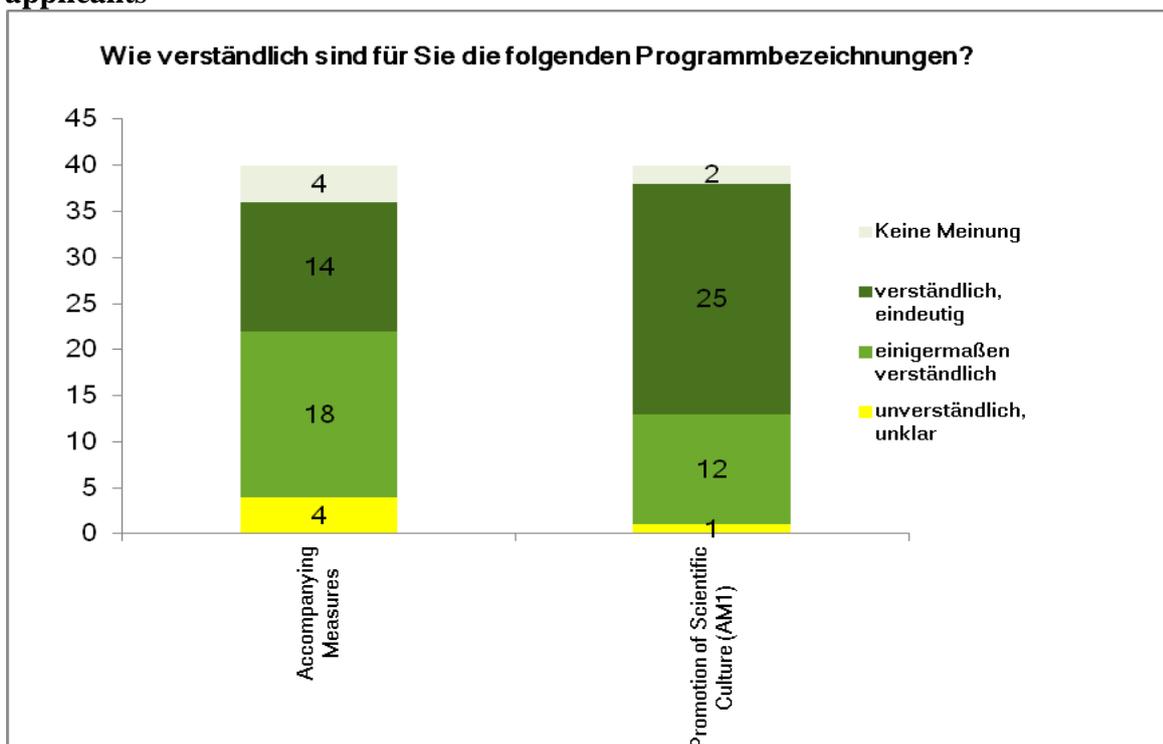
In general, the understandabilities of all of the AM funding scheme headings were rated as ‘good’ by the majority of AM2-4 respondents, followed by the rating ‘very good’. A relatively high proportion of applicants, however, had been uncertain what to think of the meaning of the headings (21.8% of the responses). These uncertainties were especially high for AM1 and AM4 (92 responses each), followed by AM3 (85 responses), AM2 (35 responses) and the overall title ‘Accompanying Measure’ (30 responses).

Understandability of the headings of the AM funding scheme AM1 applicants and beneficiaries

As applicants and beneficiaries with AM1 experience are not necessarily familiar with all of the AMs, we asked them purely about the understandability of the general heading ‘Accompanying Measures’ and ‘Promotion of Scientific Cultures’. AM1-experienced respondents rated these headings as being understandable, although the term ‘Accompanying Measures’ was not as clear to them as ‘Promotion of Scientific Culture’.

In conclusion, most of the applicant groups rated the headings of the AM funding scheme as being understandable. As we had only asked people who already had experience with the AM funding scheme, all of them were familiar with the respective terminology, of course, yet didn’t rate them very highly, indicating that there is room for improvement, especially for the general heading ‘Accompanying Measure’, which was less comprehensible and therefore less helpful as a guide, in particular for AM1 applicants, and ‘Promotion of Scientific Culture’ for AM2-4 applicants.

Fig. 19 Understandability of the headings of the AM funding scheme for AM 1 applicants



6.2.3. Selection

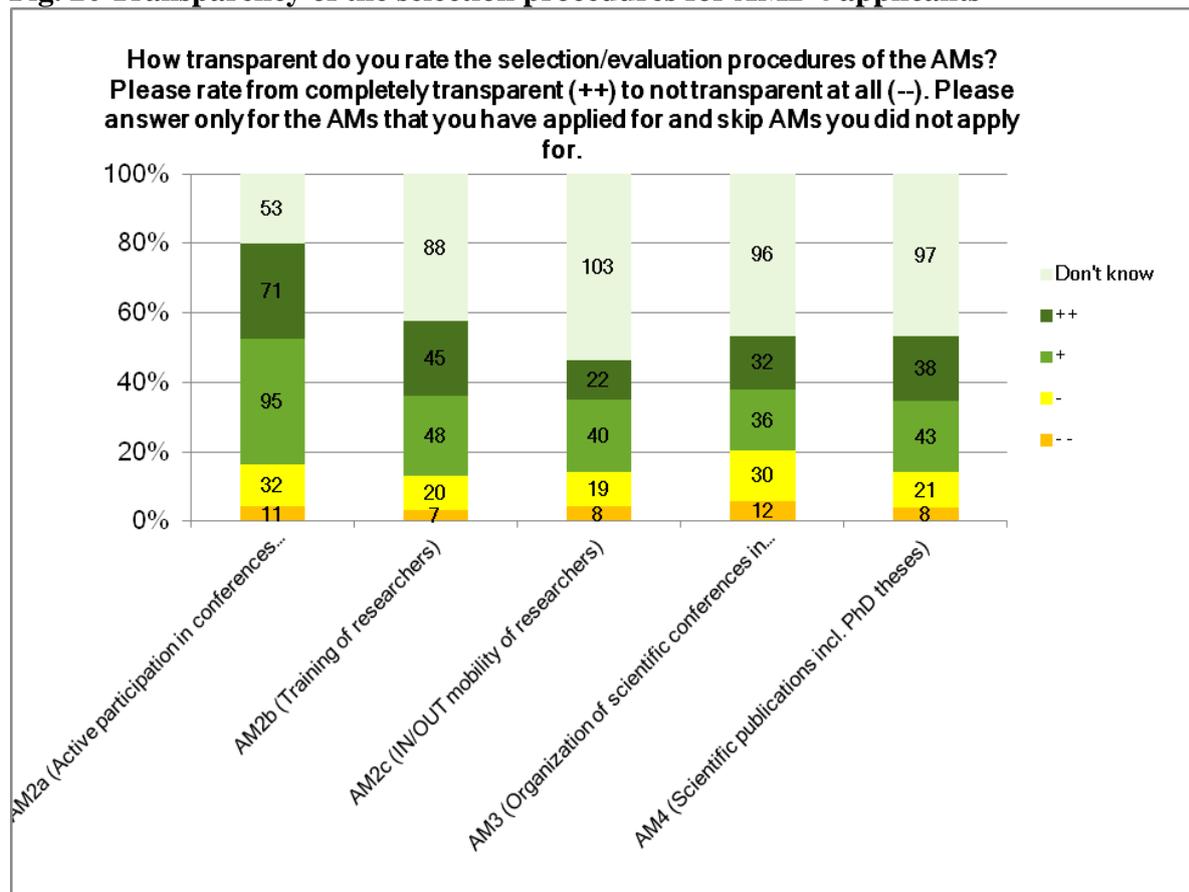
Transparency and understandability of the FNR’s selection procedures are rated differently for the different AMs. Firstly, we found a high percentage of respondents to this set of questions who answered with ‘don’t know’. Although we had asked respondents to skip questions about AMs that they had no experience with, one explanation for these high numbers might be that the respondents may have answered with ‘don’t know’ rather than simply skipping that question. To take one example: Out of the 324 respondents to the AM2-4 survey, 208 AM2a applicants participated, yet a total of 262 rated the selection procedure of AM2a (see Fig 20). This means that 54 respondents answered questions about AM2a without having in fact applied to AM2a. These respondents were, of course, also welcome to share

their experiences with the funding scheme. However, this might also explain why 53 respondents answered ‘don’t know’ in the case of AM2a, because they were not familiar with this particular AM tool, rather than actually being not sure how to rate the selection procedure. This set of questions is, by the way, a good example of the enthusiasm of the respondents to participate as much as possible and contribute their experience to the further development of the AM funding scheme.

The majority of respondents to the AM2-4 survey rated the selection procedures for the accompanying measures as ‘transparent’, followed by the rating ‘completely transparent’. This indicates that the FNR is doing pretty well.

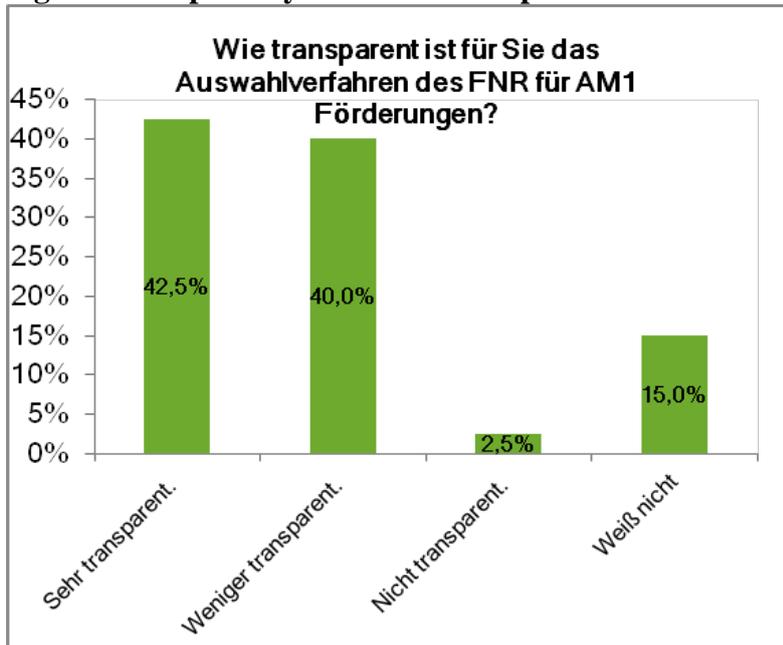
For each AMs of the AM2-4 group the smallest group rated their particular selection procedure as being ‘not transparent at all’. We looked at this group together with the group that rated the transparency of the selection procedure as slightly better, but still negative. While the selection procedure for AM2a, AM2b, AM2c and AM4 are all more or less in the same range, the transparency of the selection procedures for AM3 is viewed most critically, still bearing in mind that we are looking at a relatively small cohort. This was confirmed in our interviews with major stakeholders. However, most of the criticism was addressed at the selection and eligibility criteria, rather the selection process itself.

Fig. 20 Transparency of the selection procedures for AM2-4 applicants



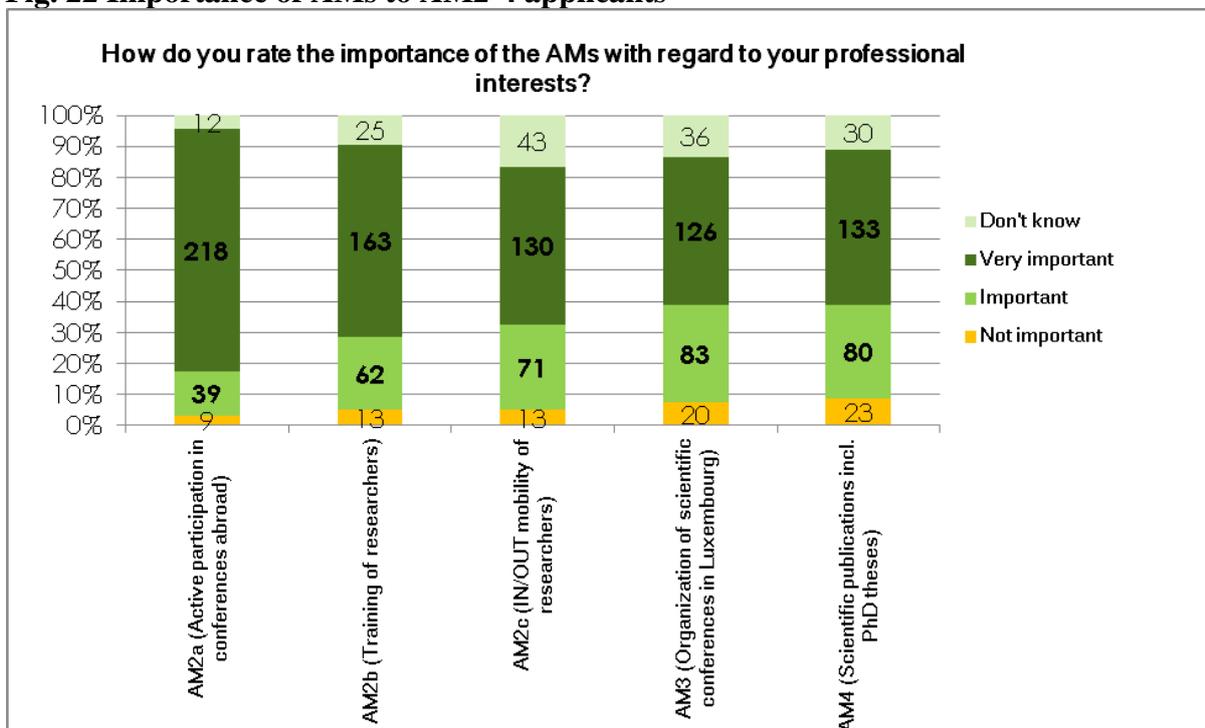
AM1 applicants also perceived the selection procedures for AM1 applications as being transparent. Here, the largest proportion of the survey respondents rated the selection procedure for AM1 as being ‘very transparent’, followed by a cohort that considered it to be transparent to a certain degree, but still comprehensible.

Fig. 21 Transparency of the selection procedures for AM1 applicants



6.2.4. Importance and necessity of the AMs

Fig. 22 Importance of AMs to AM2-4 applicants



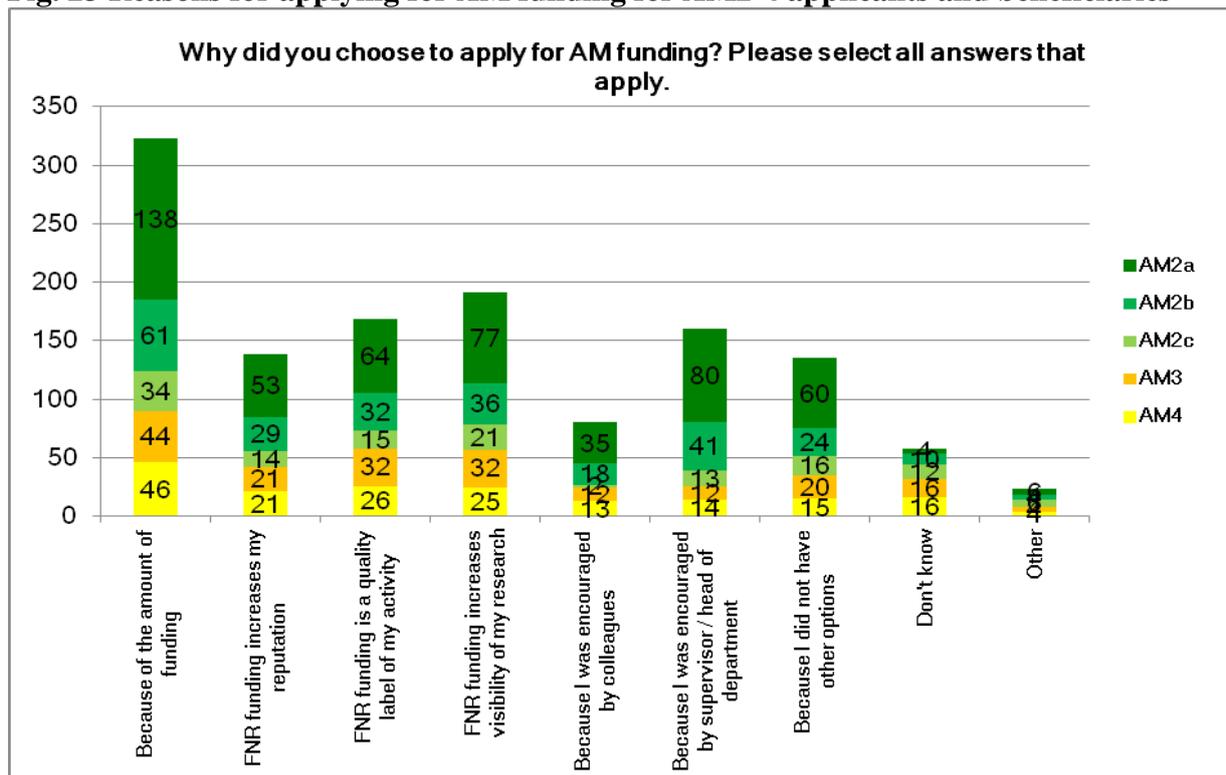
Of course, as the AMs address core issues of a researcher's professional life, they are generally rated as being important to very important. However there are slight differences, especially when we look at the rating 'very important'. These ratings were partially in contradiction to the perception of the importance of the measures by the representatives of the PROs in our interviews, where most applicants perceived AM2a as being the most important to them, followed by AM2b, AM4, AM2c and finally AM3. However, one has to be careful in

interpreting these rankings, as they might in part just reflect the experience background of the respondents that answered our surveys. Most of the respondents to the AM2-4 survey were young investigators, within the first 4 years after completing their doctorate, who had applied to AM2a. They considered AM2a as being more important for them than AM3, organisation of conferences, for example, as most of them had applied to AM2a and were least likely to have applied to AM3.

These ratings might also be less indicative of the importance of AMs to applicants than of the need for FNR funding of these activities, especially in the case of AM4, the funding of publications, which was rated as being of medium importance by all AM2-4 applicants. As some of the respondents do applied research, publishing is not of utmost importance to them, taking second place to the valorisation of their research results. At this stage, they most probably have other sources of funding to finance publications. In addition to this, most institutions either have a budget or at least can arrange funding to finance or co-finance publications and these costs can also be covered by the major funding tools provided by the FNR.

We also wanted to know the reasons why applicants applied for AM funding. The most common reason why applicants apply for an AM is the amount of funding.

Fig. 23 Reasons for applying for AM funding for AM2-4 applicants and beneficiaries



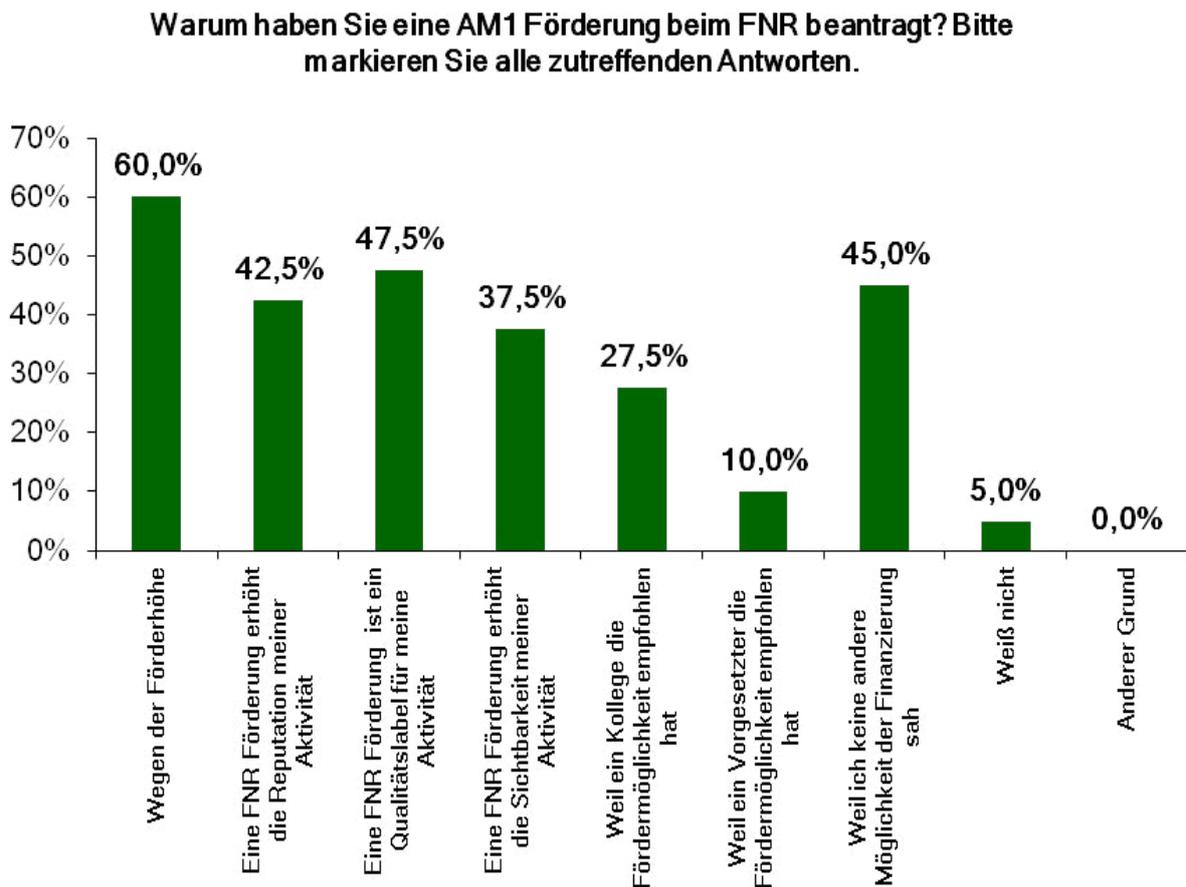
- The reason for applying ranked from:
- Because of the amount of funding (212)
 - FNR funding increases visibility of my research (136)
 - FNR funding is a quality label of my activity (124)
 - Because I was encouraged by supervisor/head of department (117)
 - FNR funding increases my reputation (100)
 - Because I did not have any other options (92)
 - Because I was encouraged by colleagues (69)

These results, especially the ranking of ‘increases visibility of my research’ and the perception of FNR funding as ‘a quality label of my activity’, was surprising to the FNR itself, as FNR staff had rather expected that most applicants would have perceived funding as a necessary evil.

When we asked AM1 applicants, their answers ranged from ‘Because of the amount of funding’, ranking first. In second position, however, came the reason ‘FNR funding is a quality label of my activity’.

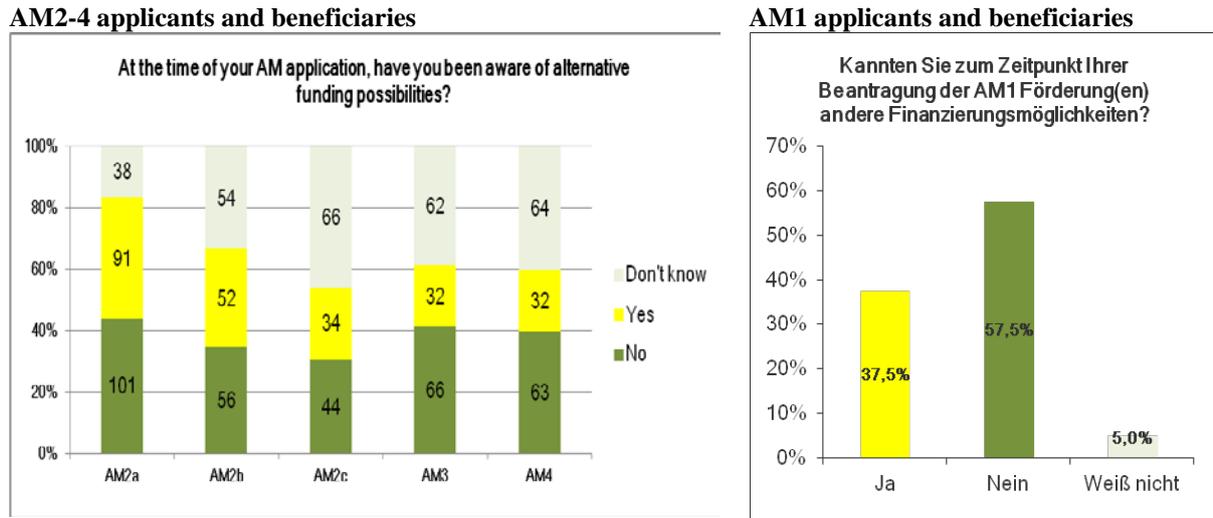
We did not ask AM1 applicants about the criterion ‘visibility of my research’, as most of this cohort do not do research themselves, being schools and non-profit-organisations. However, when comparing AM1 and AM2-4 applicants, it was striking that there was obviously a stronger need for funding in the consciousness of AM1 applicants (‘Because I did not have any other options’ was ranked 3rd by 45% of the AM1 applicants, then AM2-4 applicants felt (in 6th place)).

Fig. 24 Reasons for applying for AM funding for AM2-4 applicants



Consistent with these results (data not shown), 72.5% of the respondents to the AM1 survey rated funding of their AM1 activity as ‘very important’ (72.5%) and 22.5% rated funding as being important to them. 57.5% of the AM1 applicants did not know of any other sources of funding apart from the FNR when they applied (Fig. 25).

Fig. 25 Awareness of alternative funding possibilities at time of application

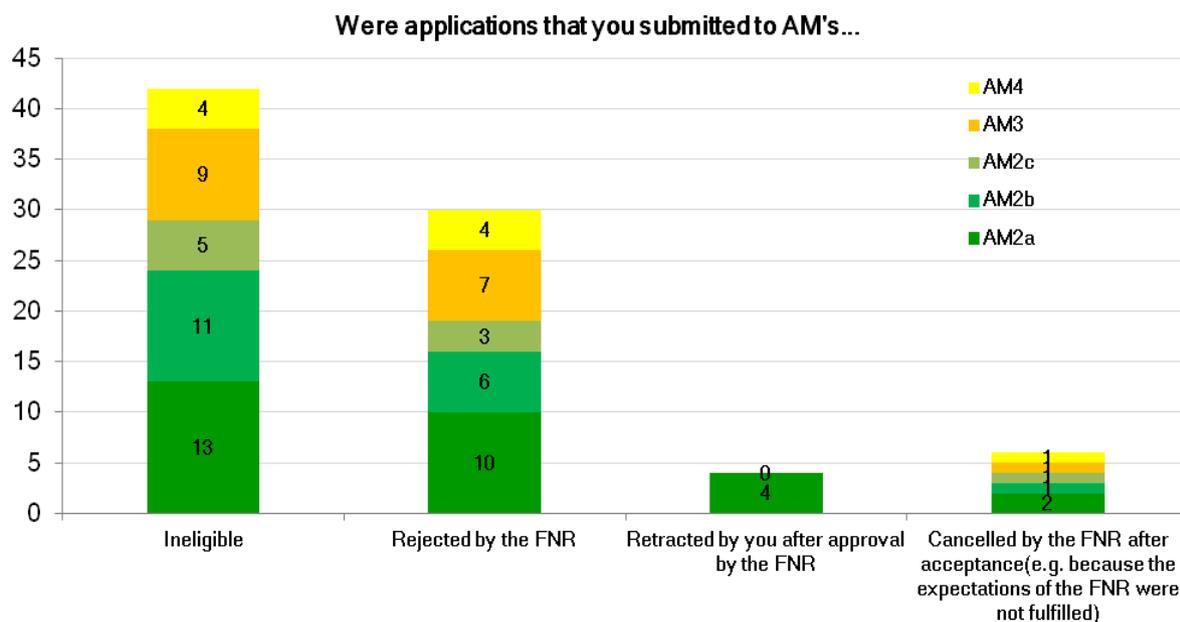


This situation was similar for AM2-4 applicants, with a variation between 51.9% (AM2b) and 74.1% (AM4) of the respondents who expressed a clear opinion that they were not aware of alternative funding possibilities (52% (AM2a), AM2b 51.9% AM2c 56.4%, AM3 67.4%). We are reluctant to interpret these results further in terms of the need for funding, as a high proportion of the respondents no longer knew if they had known of other funding possibilities at the time of application, or not.

6.2.5. Retracted or unsuccessful applications

92.5% of the AM1 applicants who responded to the survey were successful, while 7.5% of the applications were unsuccessful. Two of the applicants in this cohort shared their experiences with us in the survey.

Fig. 26 Reasons for unsuccessful applications by AM2-4 applicants



Both applications were rejected for reasons of ineligibility. One received funding from other sources, whereas the other was no longer interested in pursuing the planned activity any more.

As this cohort is too small to allow for significant results, we did not perform any further analysis.

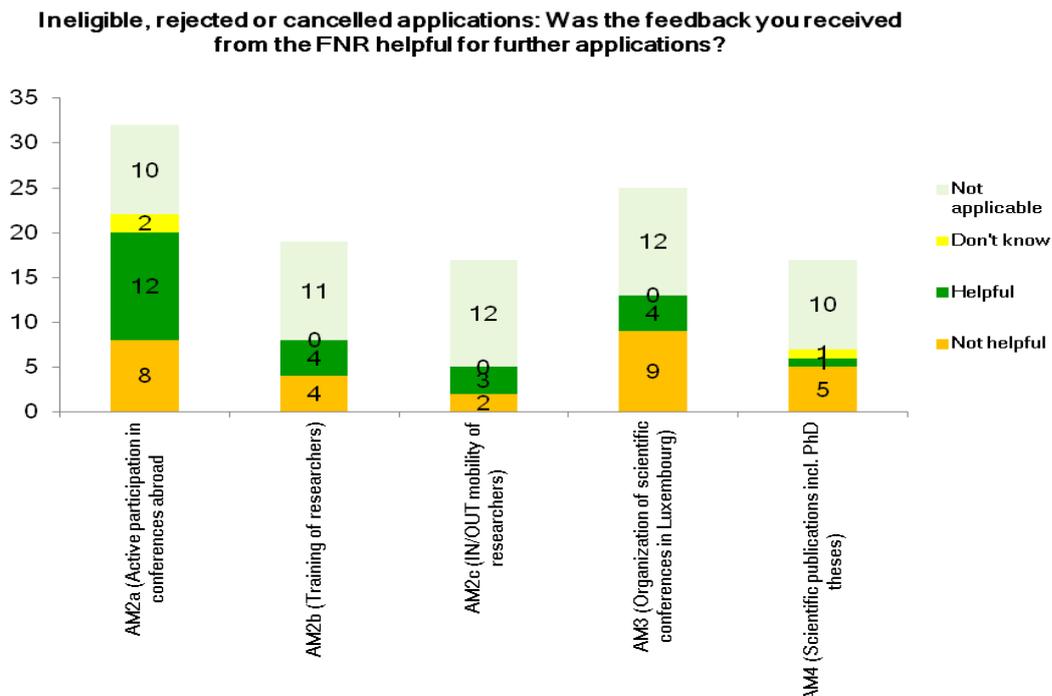
77.2% of the respondents to the AM2-4 survey were successful in obtaining AM funding, while 22.8% of these respondents were either unsuccessful or withdrew their application. The most common reason for an unsuccessful application, as shown in Fig. 26, was ineligibility of the application for the respective AM, as was most frequently seen for AM2a or AM2b applications. The most common reasons for their ineligibility were that they failed to meet the criteria due to formalities rather than content. As revealed by the comments from the respondents, they simply missed the application deadline, which was enforced by the FNR.

6.2.5.1. Feedback from the FNR

If AM2-4 applicants received feedback from the FNR, which is only given in cases of rejection, ineligibility and cancellation of funding after approval, the feedback they received was primarily helpful for AM2a and AM2c applicants, while the majority of applicants to AM3 or AM4 did not consider the feedback they received to have been helpful (AM 2b applicants evaluated the feedback neutral).

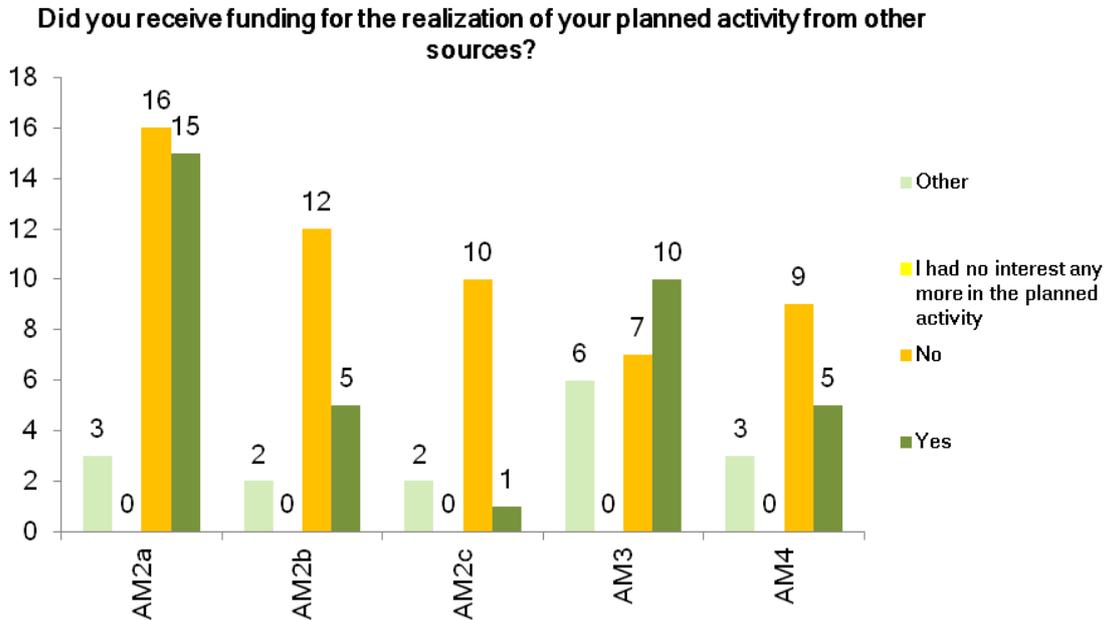
Some 62.9% of AM1 applicants who responded to our survey did not have to modify the work proposed in their application. Some 17.1 % (6 respondents) were asked to revise their application by the FNR. Three of these applicants shared their experiences with us, one noting that the project was granted funding after they followed the suggestions, whereas the other two did not consider the comments by the FNR to have been helpful (data not show). As these small numbers do not allow us to draw significant conclusions, we did not perform any further analysis.

Fig. 27 Helpfulness of FNR feedback to AM2-4 applicants and beneficiaries



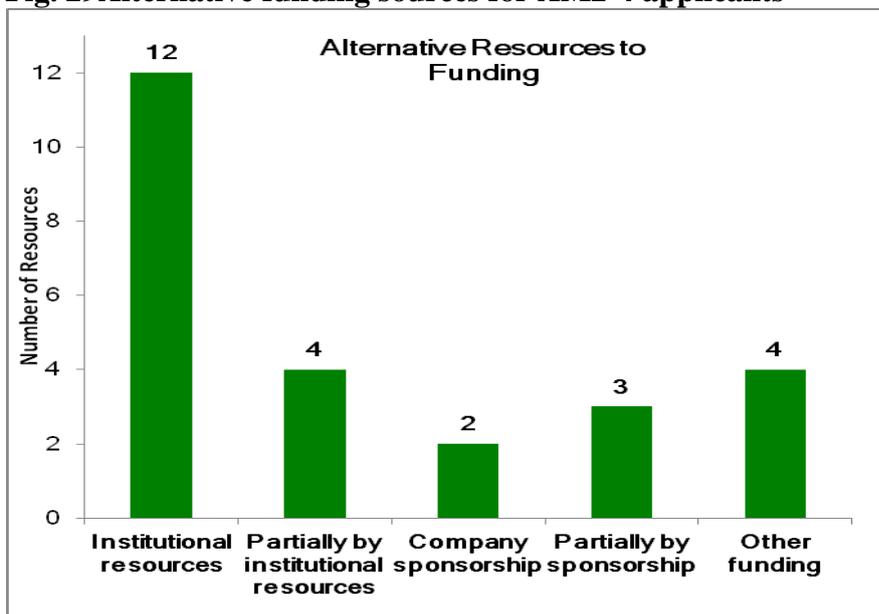
6.2.5.2. Alternative funding sources

Fig. 28 Need for funding of AM2-4 applicants and beneficiaries



Most of the applicants to AM2a, AM2b, AM2c and AM4 did not receive funding for the planned activity of unsuccessful applications from other sources. The majority of AM3 applicants did receive funding from other sources. However, as explained in the interviews, they felt extremely high pressure to find alternative sources of funding, as they would have lost face if a conference or meeting with invited speakers that had already been announced (a prerequisite for application) had not taken place. However, finding alternative sources of funding was extremely difficult for them.

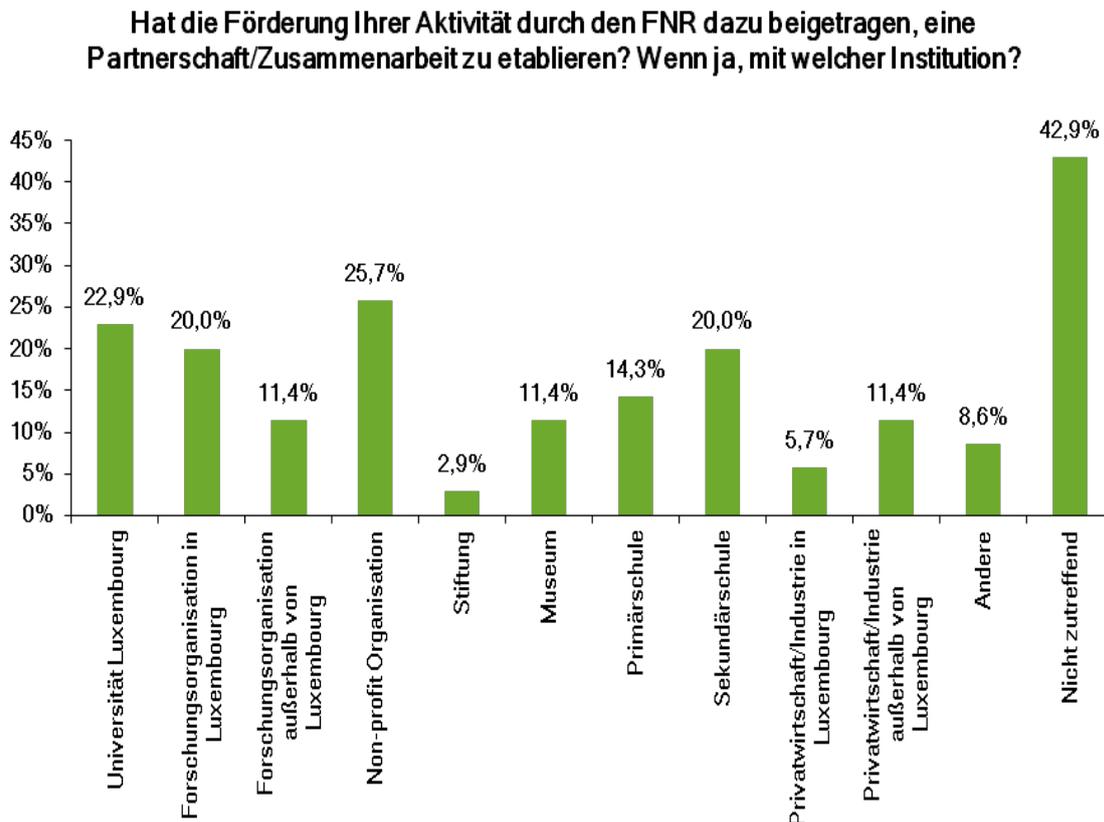
Fig. 29 Alternative funding sources for AM2-4 applicants



The most common alternative sources of funding were institutional funds, followed by other unidentified funding sources, not named by the respondents, partial sponsorship, and finally full coverage of the costs by companies.

6.2.6. Benefits of AMs for the beneficiaries

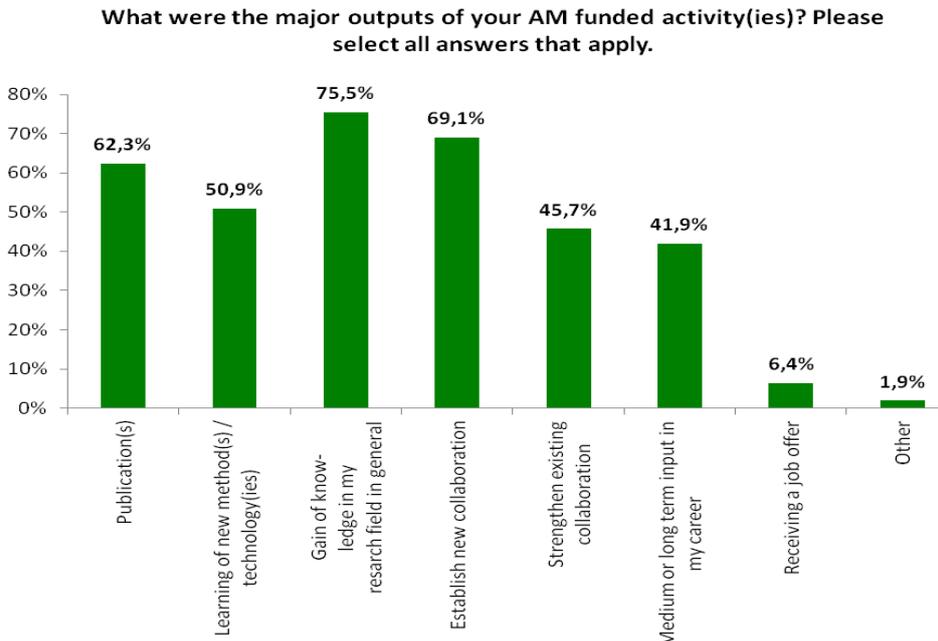
Fig. 30 Benefits of AM funded activities for AM1 applicants



In 42.9% of the cases AM1-funded activities had no impact, or an impact not asked about in the survey, while 25.7% of the activities resulted in cooperation with a non-profit organisation, followed by 22.9% with the University of Luxembourg and 20% with research organisations in Luxembourg, even with secondary schools, and 14.3 % of the activities resulted in a partnership or collaboration with primary schools, 11.4% with research organisations outside Luxembourg, even with private partners/industry outside Luxembourg, or with museums. In 8.6% of the cases the AM1-funded activities were in partnerships not named by the respondents, 5.7% with private partners/industry in Luxembourg and 2.9% with foundations. The low number of partnerships with private partners and industry in Luxembourg is striking, as it is much lower than such partnerships outside Luxembourg, indicating a lack of sponsorship culture and patronage in Luxembourg.

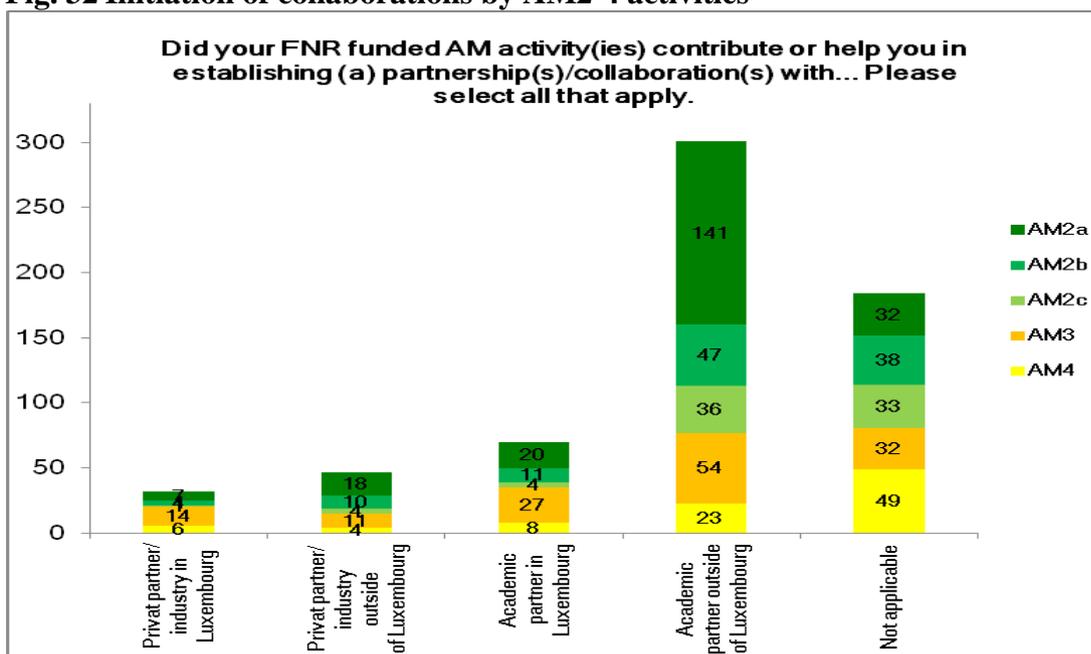
The 3 main benefits of AM2-4-funded activities identified by the applicants were ‘Gain of knowledge in my research field in general’ (200 respondents) followed by ‘Establish new collaboration’ (183 respondents) and ‘Publications’ (62 respondents). A medium to long-term boost to the career only came in 6th. As most of the applicants to AM2-4 are young researchers within the first 4 years after completing their doctorate, this indicates that most of them should also increase their awareness to utilise AMs strategically for career development, e.g., when participating in conferences abroad (AM2a).

Fig. 31 Benefits of AM funded activities for AM2-4 applicants



While AM1-funded activities predominantly had no impact, or an impact not asked about in the survey, followed by resulting in cooperation with non-profit organisations. AM2-4-funded activities most commonly resulted in the establishment of partnerships or collaborations in academic partnerships outside Luxembourg. Partnerships with the private sector and industry were largely underrepresented. Some 14.7% of the AM-funded activities resulted in a partnership with the private sector or industry outside Luxembourg, while only 10.2% resulted in a partnership in Luxembourg. Here we see the need to increase, and further potential to encourage such interactions (see also the detailed discussion of AM2c).

Fig. 32 Initiation of collaborations by AM2-4 activities



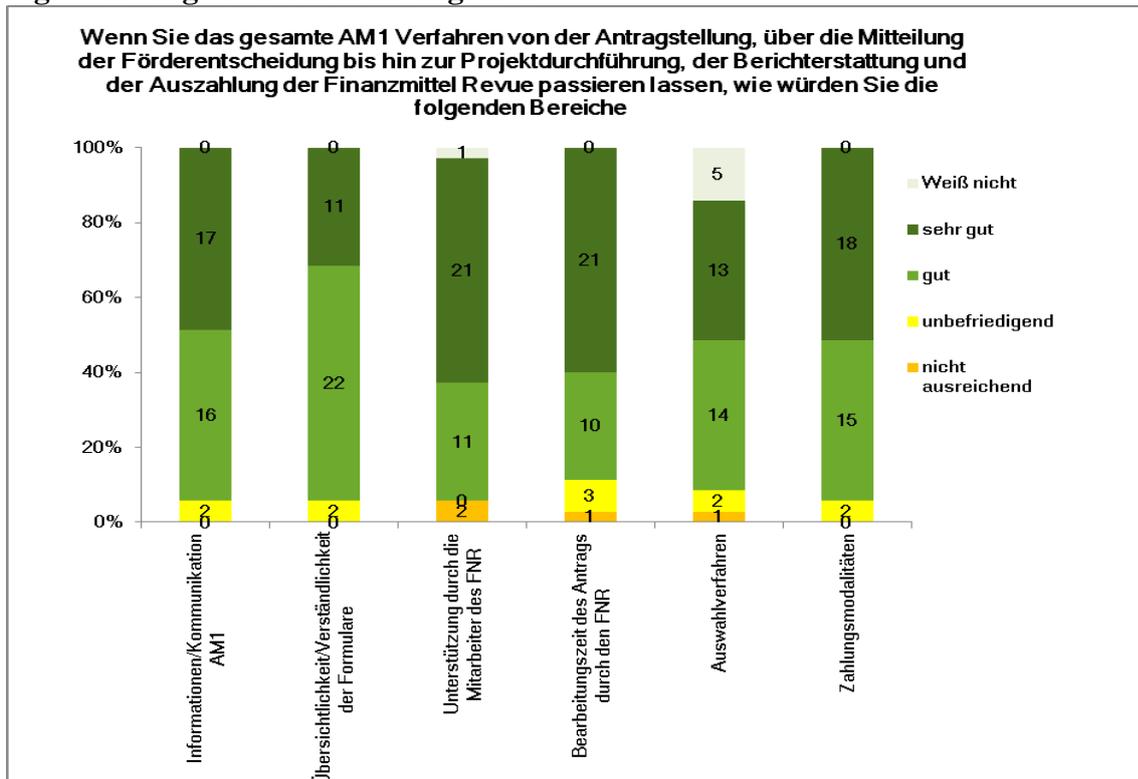
Beneficiaries of AM2a funding predominantly established academic partnerships outside Luxembourg (214). This was the most common effect of all AM2-4s, followed by no effect or effects not asked about in the survey (80) and the establishment of academic partnerships in Luxembourg (53). The number of partnerships with the private sector and industry was very low, with 14.7% of the AM-funded activities resulting in a partnership outside Luxembourg and only 10.2% in a partnership in Luxembourg.

6.2.7. Rating of AM1 funding procedures

In general, the management of funding provided by the FNR was rated as good, mixed with some complaints about too much bureaucracy and a high workload in the funding process.

AM1 applicants explicitly rated different categories of the funding process for AM1 in detail. In general, they were satisfied with the procedures. The highest level of satisfaction amongst AM1 applicants was seen with regard to the support given to applicants by the FNR and the time it takes from submission of the application to the communication of the funding decision. They are satisfied with the payment procedures, the communication with the FNR and the information they receive from the FNR. They were slightly less satisfied with the selection procedures, especially with the clarity of forms. Here the FNR should pay attention to further simplifying the forms and increasing the amount of verbal communication, as mentioned before.

Fig. 33 Rating of the AM1 management

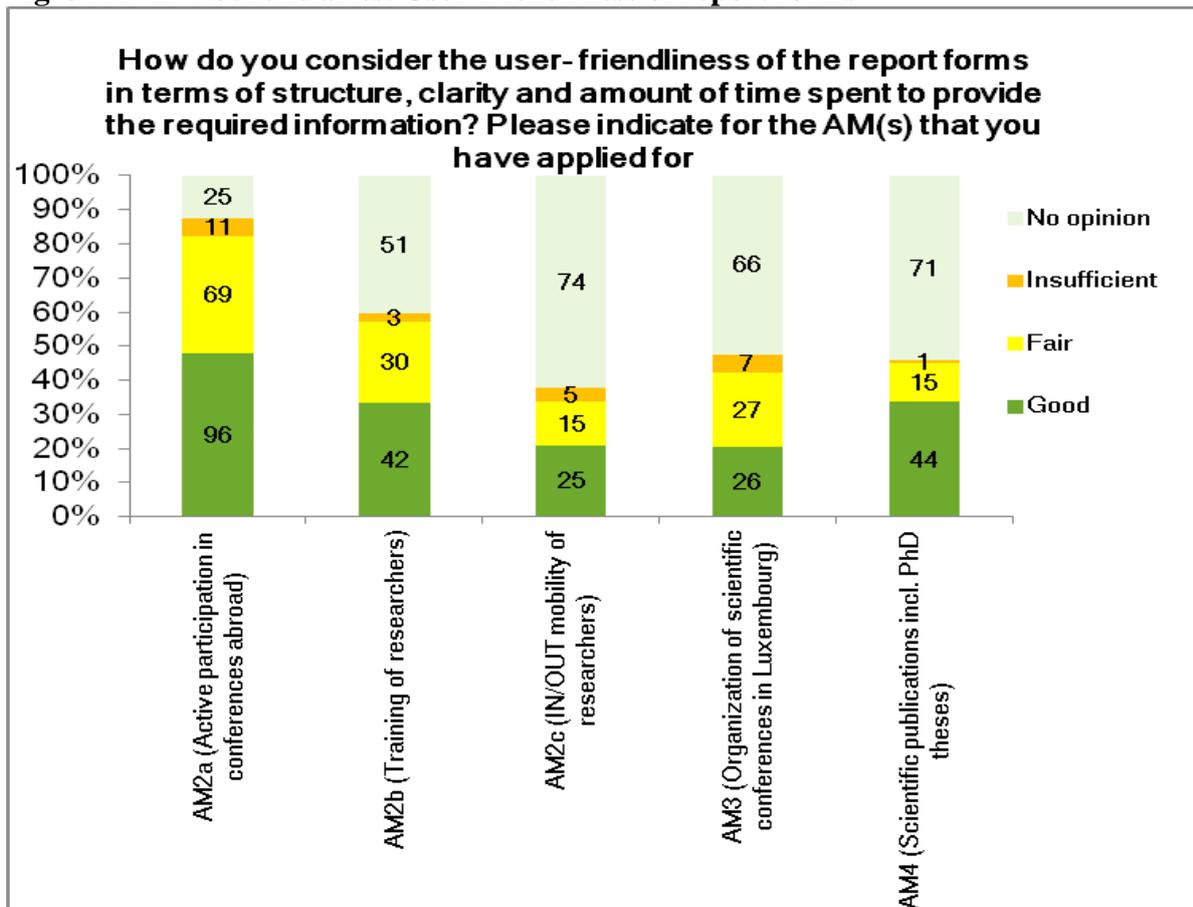


6.2.8. Reporting and payment procedures

Report forms were rated as fair to good in terms of structure, clarity, amount of time spent and required information by the majority of AM2-4 applicants. In their comments, the general

remarks varied between ‘very user-friendly and time-efficient!’ to ‘Too much time, too many certificates, bureaucracy’. There were also very specific remarks, like ‘The report form wasn't too long to fill in and pretty clear. The two longest things to fill in were: Scientific interest for Luxembourg, which I do not find relevant in the case of applied mathematics (my field) and expected results, which are basically always the same for a conference (meet people, discuss science, present the work done in our lab, etc.)’. This was repeatedly mentioned, with slight variations in wording.

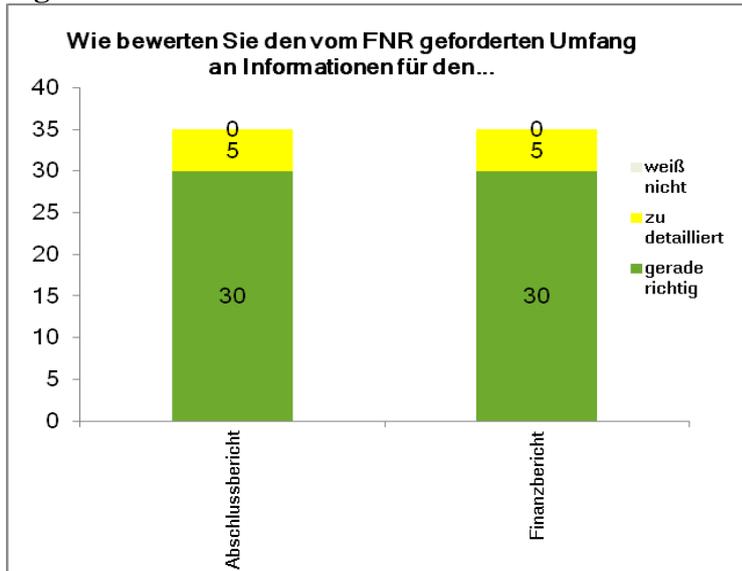
Fig. 34 AM2-4 beneficiaries: User-friendliness of report forms



Ratings of the reporting as being insufficient were in the minority. The highest level of satisfaction with reporting amongst AM2-4 applicants was seen for AM4, followed by AM2b and AM2a. The lowest level of satisfaction was seen for AM3 and AM2c. However, this is not surprising, as these two measures are the most complex AMs in terms of content, comprising the organisation of scientific conferences in Luxembourg and the mobility of researchers in and out, both of which require the most information in terms of content and complexity.

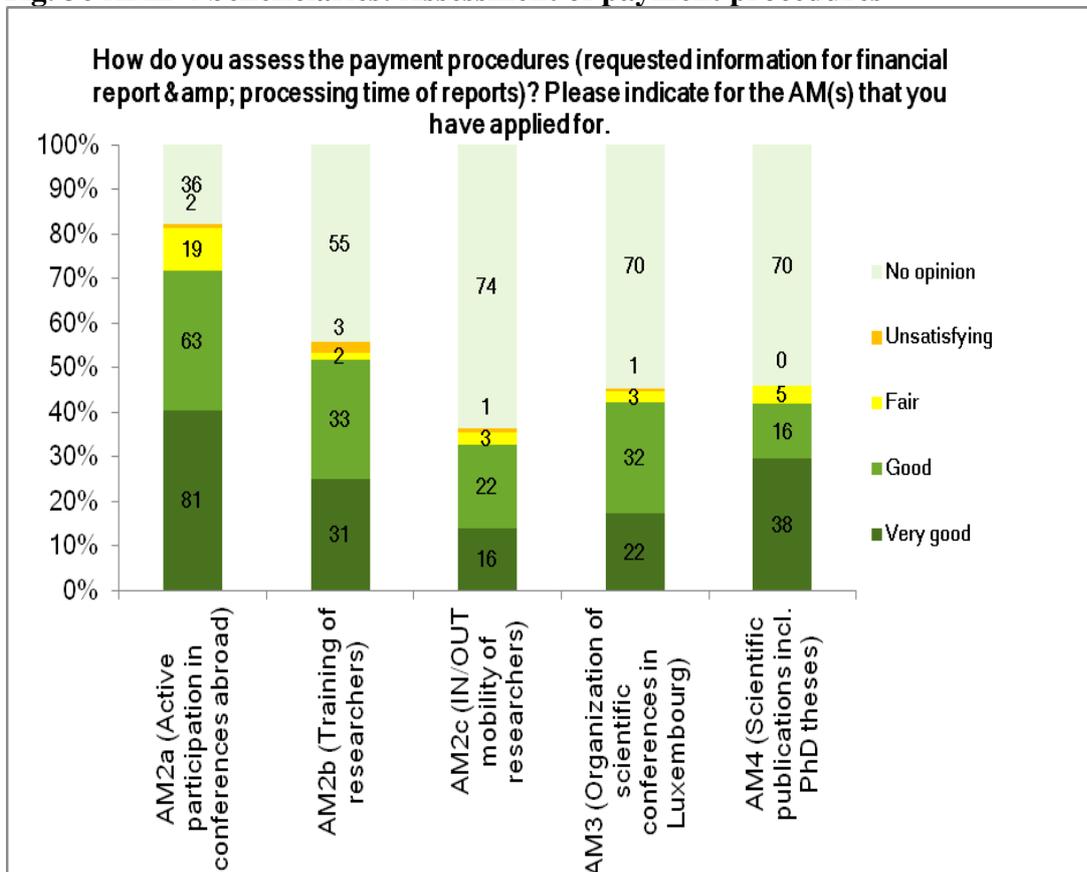
The majority of AM1 beneficiaries were content with the amount of information required in the final and financial reports.

Fig. 35 AM1 beneficiaries: Amount of information requested by the FNR in reporting



AM2-4 beneficiaries who expressed an opinion about their level of satisfaction with the payment procedures were most content with the AM2a procedures, followed by AM2b, AM4, AM3 (we placed AM3 procedures in 4th place as there was one dissatisfied respondent, whereas AM4 did not have any dissatisfied respondents) and AM2c comes in last.

Fig. 36 AM2-4 beneficiaries: Assessment of payment procedures

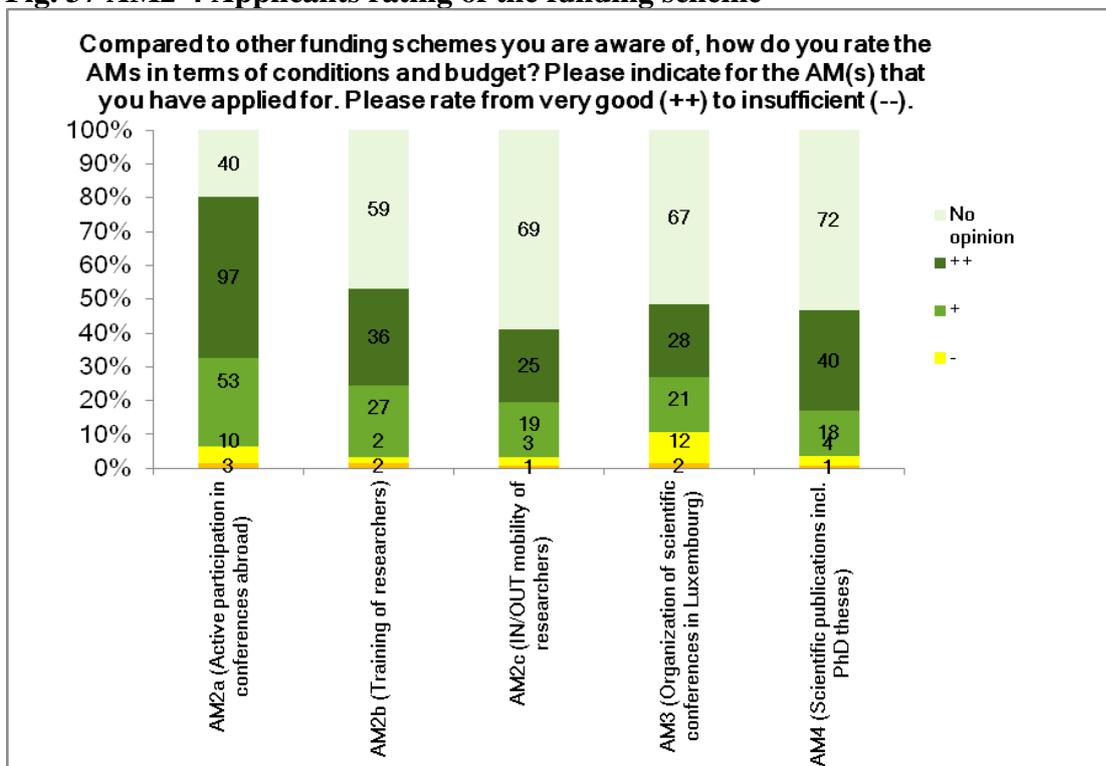


In the comments made by the participants in response to this question there is a lot of uncertainty noticeable about the amount of reimbursement and the reimbursement procedure itself. Some participants complain about the payment procedure, as they received payment only after the AM activity had taken place, e.g., for participation in conferences abroad funded under AM2a. For PhD students, who would already need the money during their planned visit, the reimbursement would not be available at that time. In response to our request, the FNR informed us that students do have the possibility of receiving the registration fees beforehand, but only on request. For travel expenses, however, they can only be reimbursed after presenting the actual bills. As such possibilities are not mentioned in the guidelines, we recommend the inclusion of such possibilities into the guidelines to reduce possible insecurities.

6.2.9. Satisfaction of applicants with the AM funding scheme

When AM2-4 applicants were asked to express their satisfaction with the AM funding scheme in comparison to other funding schemes that they had experienced, most of those that expressed an opinion perceived the funding scheme as being good to very good. They rated AM2a best, before AM2b, AM3, AM4 and finally AM2c. However, most of the participants expressed no explicit opinion. Two major reasons may account for this. Firstly, they did not know of other funding schemes (also mentioned in the free comments). Secondly, the answer profile may, to a high degree, reflect the experience profile of the respondents, most of them having applied to AM2a, and the fewest to AM2c.

Fig. 37 AM2-4 Applicants rating of the funding scheme



6.2.10. Cost coverage by AM funding from the perspective of beneficiaries

Out of those who expressed their opinion, the majority considered the support they received to have been sufficient. 83.7%, considered the funding they received under AM2c for IN or OUT mobility as being sufficient to cover all costs they needed funding for, while 78.7% of this cohort considered the funding they received under AM2b as sufficient, followed by

76.7% beneficiaries of AM4, and 72.8% beneficiaries of AM2a. For AM3, the majority of respondents considered the support they had received as not sufficient to cover the costs they needed funding for.

Fig. 38 AM2-4 beneficiaries: Cost coverage by the funding received

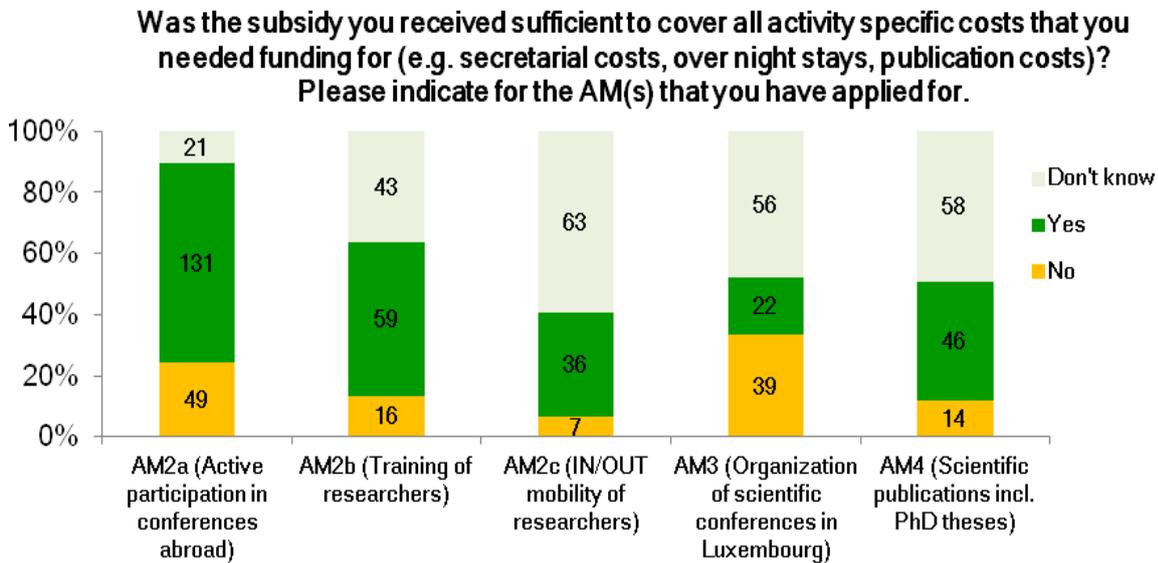
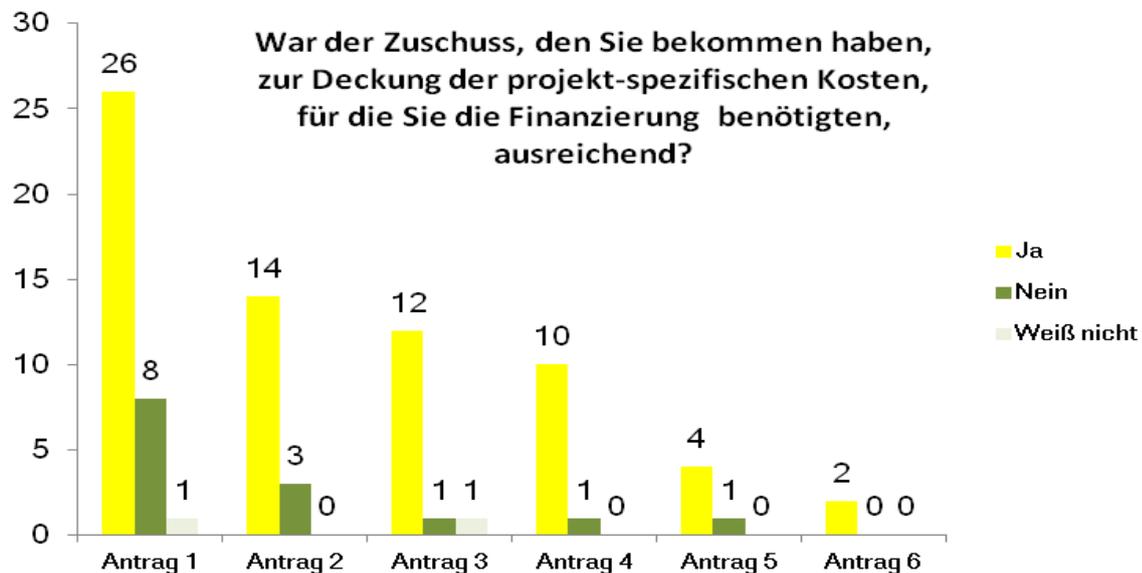


Fig. 39 AM1 beneficiaries: Cost coverage by the funding received



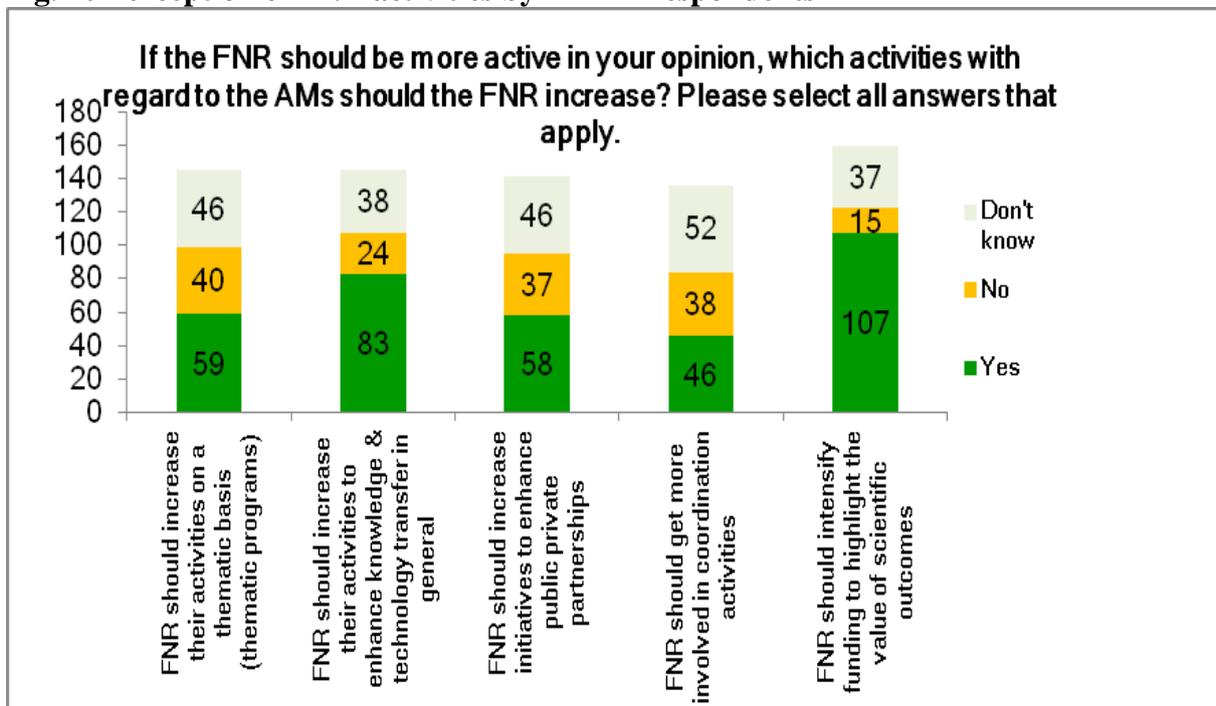
We also asked AM1 beneficiaries whether the subsidy they received had been sufficient to cover all of the project-specific costs they needed funding for. As we knew from our statistical analyses that AM1 beneficiaries have a tendency to apply repeatedly to AM1, we also inquired about their satisfaction in relation to the number of applications they had submitted. When we asked AM1 beneficiaries whether the support they had received had been sufficient to cover the project-specific costs, a slight trend was seen that the funding they received was usually sufficient to cover the project-specific costs as the number of applications per applicant increased. Nevertheless, the majority of applicants only apply once for AM1 funding. 77.1% of these beneficiaries considered the support they received to have been sufficient to cover all of the project-specific costs they needed funding for.

6.2.11. Suggestions

6.2.11.1. Suggestions by stakeholders in the surveys

When asked, most of the respondents (107) to the AM2-4 survey expressed the opinion that the FNR should intensify funding to highlight the value of scientific outcomes. Eighty three respondents wanted the FNR to increase its activities to enhance knowledge & technology transfer in general. Fifty nine participants would like the FNR to increase its activities on a thematic basis (thematic programmes), although 40 respondents were strictly against such efforts. This tendency was underlined in the free comments in response to this question. The situation was almost the same for respondents who requested that the FNR should increase its initiatives to enhance public private partnerships and those who did not want such efforts. The least need was seen for the FNR to become more involved in coordination activities. Here, however, the proportion of respondents who did not have an explicit opinion was the highest.

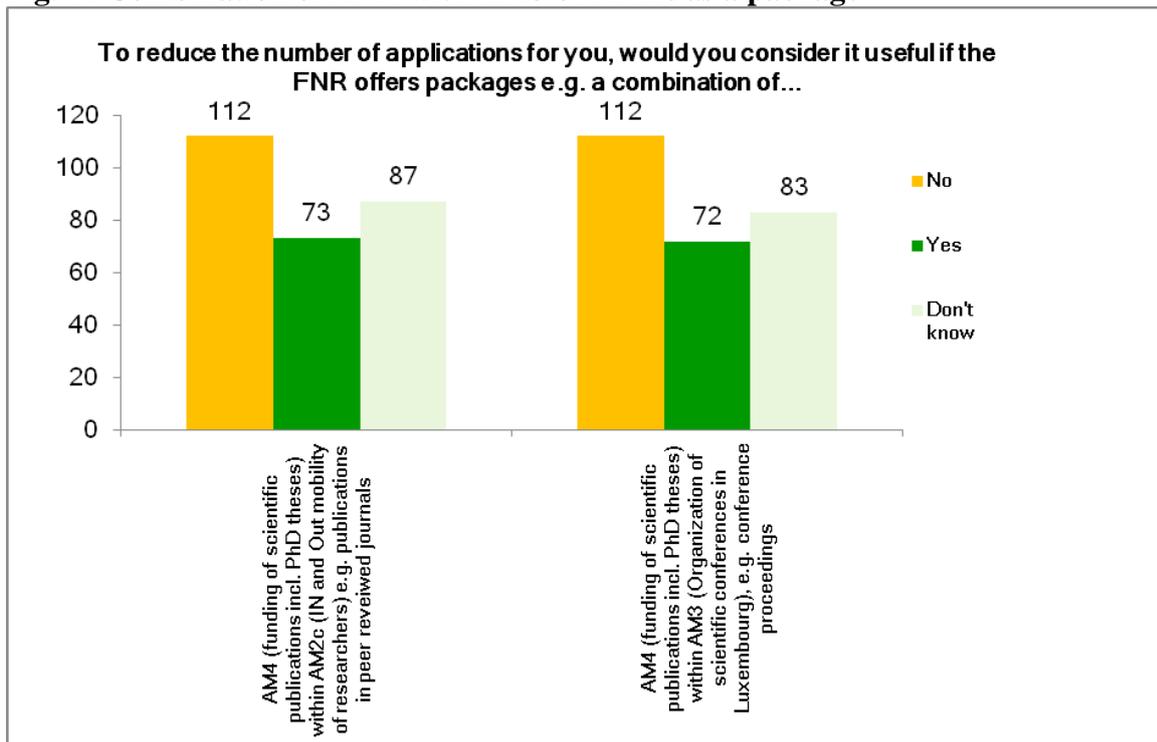
Fig. 40 Perception of FNR activities by AM2-4 respondents



In the AM2-4 survey we inquired explicitly whether the respondents would consider it useful for reducing the number of applications they submit if the FNR offers packages of AM4 and AM2c or AM4 and AM3.

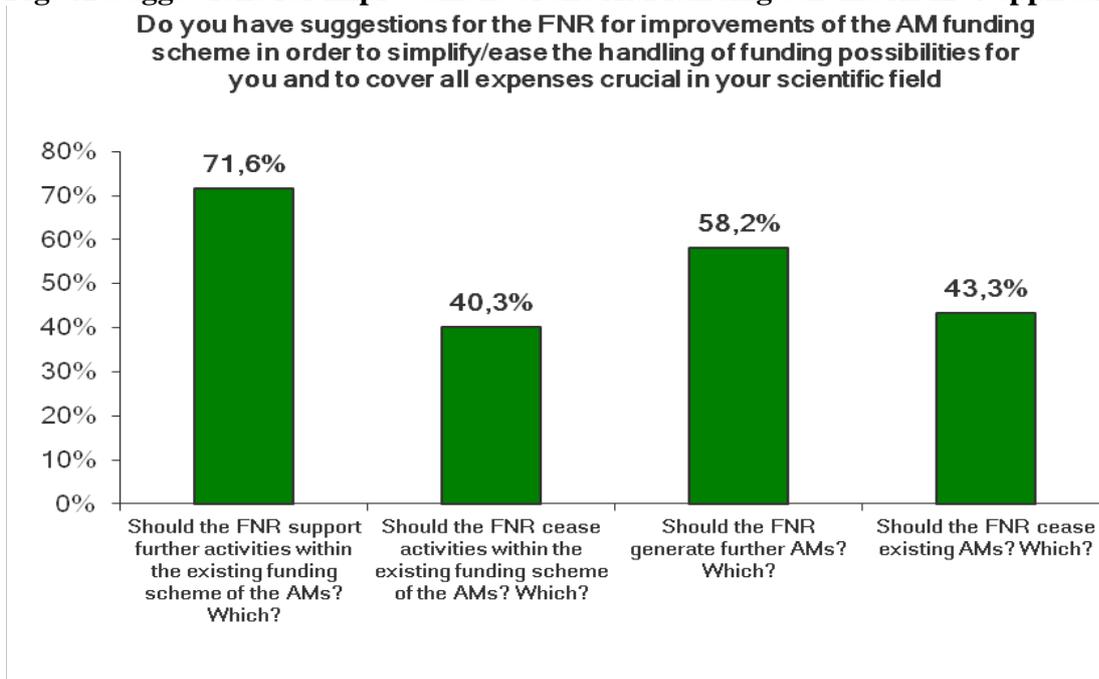
The majority of respondents did not want AM4 to be combined with AM2c or AM3, however many were indifferent about these suggestions (see Fig. 41). In the free comments in response to this question, the pros and cons about combinations of the various AMs in general were more or less even. The majority of respondents who were against combinations expressed their satisfaction with the current situation and did not see any need for change. The majority of respondents who were in favour of combining AMs also stated that they did so as they expected this would result in a reduction in bureaucracy.

Fig. 41 Combination of AM4 with AM3 or AM2c as a package



We inquired whether respondents to our survey had any suggestions for the FNR on how to improve the AM funding scheme in order to simplify/ease the handling of funding possibilities for them and to cover all of the crucial expenses in their own scientific field.

Fig. 42 Suggestions for improvement of the AM funding scheme AM2-4 applicants



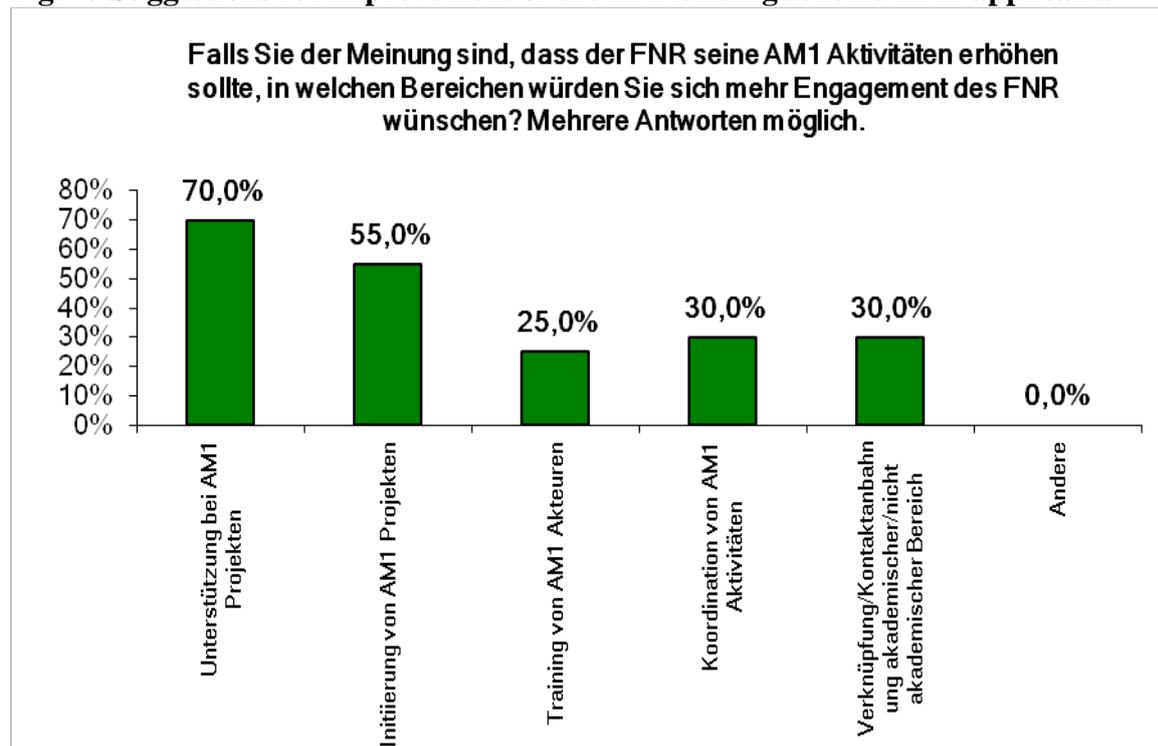
Although 71.6% of the respondents expressed the wish that the FNR should support further activities, the suggestions in the free comments addressed details in eligibility or cost coverage rather than new activities. These suggestions we accounted for in the discussion of each AM. Both questions concerning the reduction of AM-funded activities or the

discontinuation of AMs were rejected. In response to the question as to whether the FNR should create new AMs, many suggestions related to additional training courses for language and writing skills, collaborations and the establishment of networks by funding the organisation of conferences outside Luxembourg as well as for joint projects with foreign institutions or educational issues such as an AM2c measure for ‘education not in research’, and the strengthening of AM2c support for more senior scientists, e.g., for a sabbatical abroad.

Almost two thirds, or 62.2% of the respondents to the AM1 survey were content with the FNR’s activities, while 35.1% wanted the FNR to become more active, and 2.7% were indifferent. Seventy percent of the respondents would like the FNR to increase its support for AM1 projects, 55% to increase FNR support for the initiation of AM1 projects, and 30% would like the FNR to increase its support for the coordination of AM1 activities, while the same number of respondents requested that the FNR should become more active in connecting the academic and the private sector.

In the free comments, the wish for more personal contact and verbal information was repeatedly expressed by AM1 applicants and beneficiaries.

Fig. 43 Suggestions for improvement of the AM funding scheme AM1 applicants



6.2.11.2. Summary of suggestions by stakeholders

The majority of interviewees and survey respondents were content with the type of activities funded by the AMs. Interviewees consistently expressed the wish for the FNR to reinstate a measure to support the preparation of a European Union research project. Such a measure had previously been offered by the FNR, but was discontinued in 2010 due to a lack of applications. Interviewees explained that at that time the measure had been offered too early with respect to the development of the research system and should be reconsidered in the light of the increasing number of applications to the EU. In line with the key objective of the FNR

to ensure and maintain scientific quality, funding for the preparation of an application to the EU might be problematic and evaluation of such applications would have to be coupled with quality criteria that are yet to be defined.

More than 54% of the respondents to the AM2-4 survey were content with the FNR's activities. Some 37% wanted to see the FNR become more active. Only 1 respondent wanted the FNR to be less active than it currently is. If the FNR were to increase its activities, most applicants suggested the FNR should:

- Intensify funding to highlight the value of scientific outcomes (107);
- Increase its activities to enhance knowledge & technology transfer in general (83).

In addition to this, more support of experienced researchers was requested during the interviews.

Some points of concern and requested changes included the following:

- Extend the scope of eligibility, eligibility criteria: Experience after PhD should be expanded (currently 2 years);
- Enhance the development of peer-reviewed scientific journals edited in Luxembourg;
- The FNR should offer a larger budget to allow researchers to attend at least one international conference and one summer school each year;
- Greater flexibility in the amount of funding;
- The FNR should initiate priority programmes;
- No thematic restraints on funding.

The majority of the respondents did not want AM4 to be combined with AM2c or AM3, however many were indifferent about these suggestions.

62.2% of the respondents to the AM1 survey were content with the activities of the FNR, the majority of the respondents want the FNR to increase its support for AM1 projects and the initiation of AM1 projects.

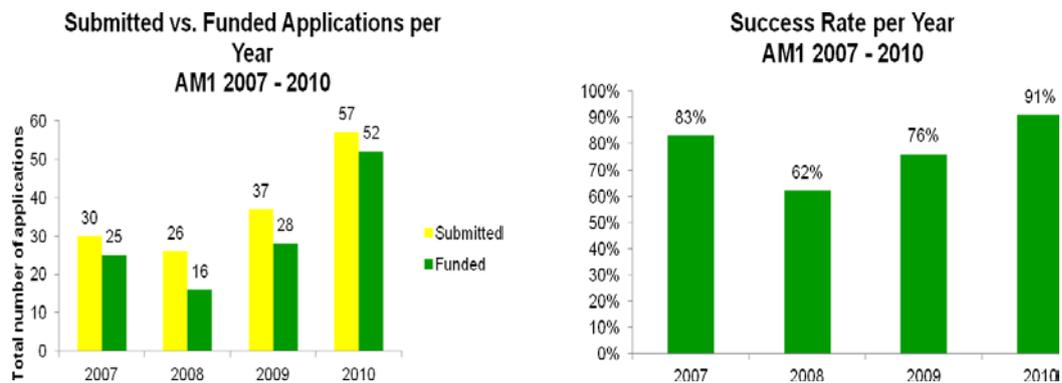
6.3. Analyses of each AM

6.3.1. AM1

Applicants and beneficiaries of AM1

Between 2007 and 2010, 150 applications to AM1 were submitted to the FNR by public institutions, public bodies with a research mission, non-profit organisations and schools, with an average success rate of 78%.

Fig. 44 Development of AM1 applications and approvals 2007 - 2010



With an average success rate of 78%, the AM1 success rate is slightly lower than the average success rate for all AMs taken together. However the development of the success rate from 2007 to 2010 reveals a steady increase, rising to 91% in 2010. The reasons for applications being unsuccessful were, as expected, rejections (15%), as the most common reason, and retractions by the applicants (7%). No approved applications were cancelled by the FNR and no applications submitted between 2007 and 2010 were ineligible.

Seventy seven percent (116) of the applications were submitted by male applicants, 33% (34) by female applicants. Applications submitted by each gender had similar success rates of 78% for male applicants and 79% for female applicants.

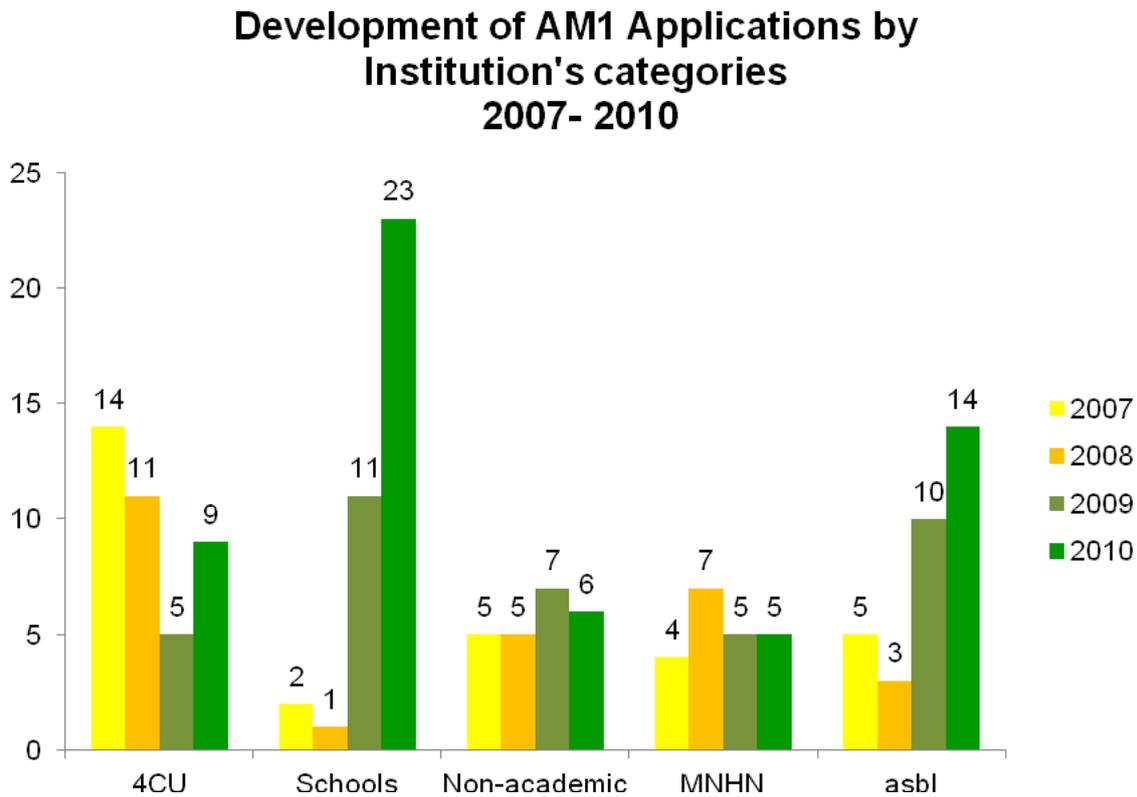
Applicants have a tendency to submit multiple applications to AM1

Out of 150 applications submitted, 100 (67%) were submitted by applicants who had submitted 4 or more applications in the period 2007 to 2010, positions 1-3 being institutions in the academic sector, with a school in 4th place, an institution in the non-academic sector in 5th place, followed by non-profit organisations in 6th place, and two more schools and an institution in the non-academic sector.

While the number of AM1 applications submitted by the 4CUs reveal an anticlimactic tendency and those institutions in the non-academic sector and the MNHN remain the same, the number of AM1 applications from schools and non-profit organisations increased dramatically from 2009 onwards, primarily as a result of initiatives by the FNR such as Mr. Science and AM1 media campaigns.

When we look at the applicants at an individual level, it is obvious that AM1 activities pursued by individuals, who apply several times in a single year and over the course of several years.

Fig. 45 Development of AM1 applications 2007 to 2010 by institution categories



Further simplification and reduction of the workload by redefining the financial range of applications in evaluation procedures

To simplify the selection procedures for the huge number of applications the FNR evaluates after submission and implement an internal administrative check based on AM eligibility and selection criteria, only AM1 applications > €7,500 by external experts, all others internally.

Tab. 18 Number of applications funded by financial range as defined by the FNR

Applications funded in the range of	Number of applications funded	Percentage of total applications funded
€ - €7,500*	84	71%
> €7,500	33	28%

Looking at the AM1 applications funded between 2007 and 2010 by financial range, as defined by the FNR, 28% of the applications were evaluated externally.

To find out whether this simplification can be further improved, we analysed the application population by financial range in steps of €5,000.

Based on these results (see Tab.19), we recommend increasing the cut-off for external evaluation to €10,000, leaving 20% of applications for external evaluation. This would further reduce the time between application and approval and increase flexibility for applicants.

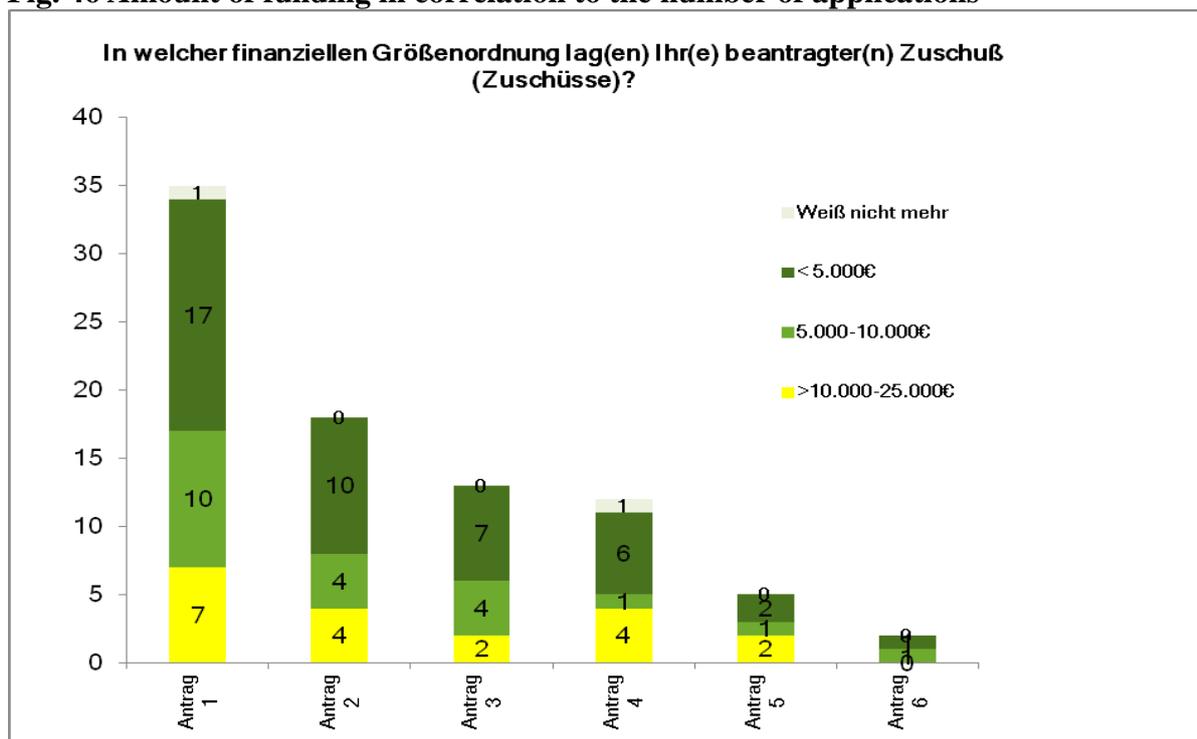
Tab. 19 Number of applications funded by financial range as defined by external advisor

Applications funded in the range of*	Number of applications funded **	Percentage of applications funded
€0 - €5,000	68	58%
€5,000 - €10,000	26	22%
€10,000 - €15,000	11	9%
€15,000 - €20,000	5	4%
€20,000 - €25,000	7	6%

**For ongoing applications that had not yet been closed, we took the maximum amount that had been granted by the FNR. For closed applications, we took the amount that was paid by the FNR.

As we knew from the statistical data that AM1 applicants tend to apply more than once for AM1 funding, we also wanted to know whether there is any correlation between the amount of funding applied for in relation to the number of applications per applicant.

Fig. 46 Amount of funding in correlation to the number of applications

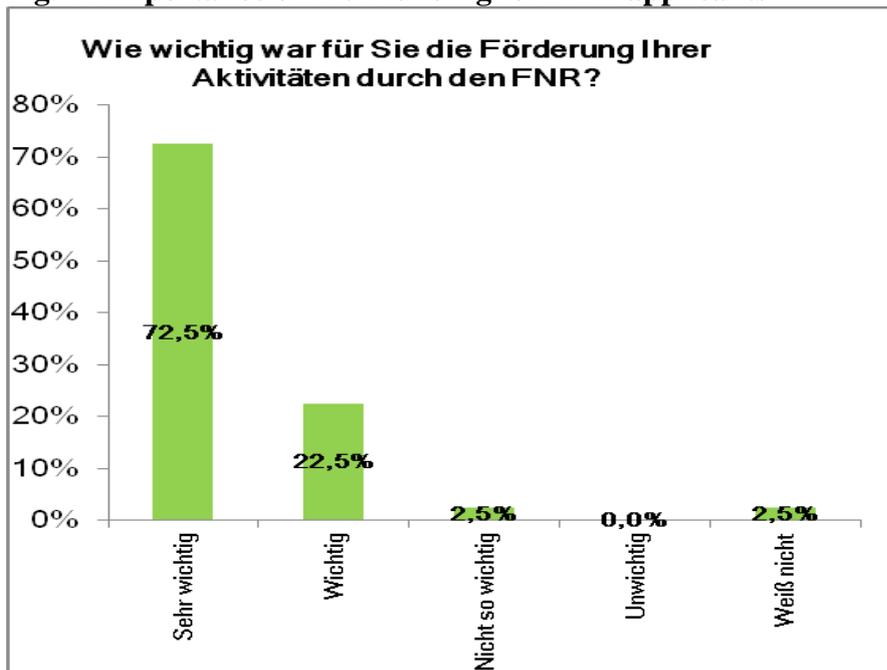


As expected, the number of respondents who apply repeatedly reduces with the number of applications. Most commonly, the respondents applied for rather small amounts of funding of less than €5,000. Ignoring minor fluctuations, no clear trend in the amount of funding, such as an increase or decrease with the number of applications, could be detected.

Importance of AM1 to the applicants

When asked how important applicants and beneficiaries of AM1 rate FNR funding for their activity, 72.5% considered funding from the FNR as being very important, 22.5% as important, and 2.5% regarded funding as being not important to them.

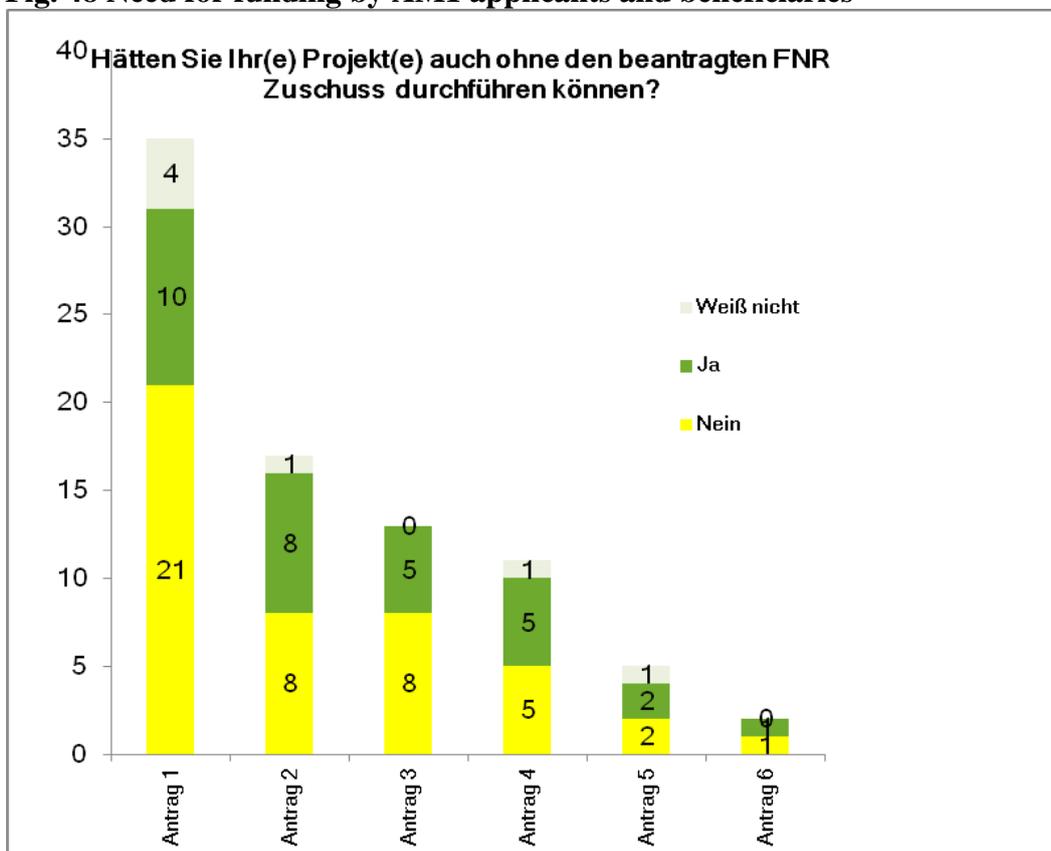
Fig. 47 Importance of FNR funding for AM1 applicants



Need for AM1 funding

We also wanted to know how much AM1 beneficiaries need FNR funding for their activity and whether there is any change in the need for funding that correlates to the number of applications submitted by a beneficiary.

Fig. 48 Need for funding by AM1 applicants and beneficiaries



Most of the respondents could not have pursued their AM1 activity without funding by the FNR. This is in particular evident for their first application to the FNR. With increasing numbers of applications, however, a trend towards lower dependency on FNR funding is seen, as the likelihood of obtaining funding from other sources becomes comparable to the need for funding from the FNR.

Cost coverage by the FNR

We also asked whether the support AM1 applicants received had been sufficient to cover the project-specific costs they needed funding for.

Tab. 20 Cost coverage of funding received by AM1 beneficiaries

Antrag	Ja	Nein	Weiß nicht	Response Count
Antrag 1	26	8	1	35
Antrag 2	14	3	0	17
Antrag 3	12	1	1	14
Antrag 4	10	1	0	11
Antrag 5	4	1	0	5
Antrag 6	2	0	0	2

Most applicants considered the amount of funding they received as having been sufficient to cover the project-specific costs they needed funding for. In the free comments in response to this question, the respondents indicated that they had been able to obtain funding from other sources to cover all of the project costs, but that it had been difficult to them.

When asked for suggestions as to which additional costs of AM1 projects should be eligible for funding at various points, the respondents and interviewees suggested including fees for speakers as well as salaries for suitable personnel.

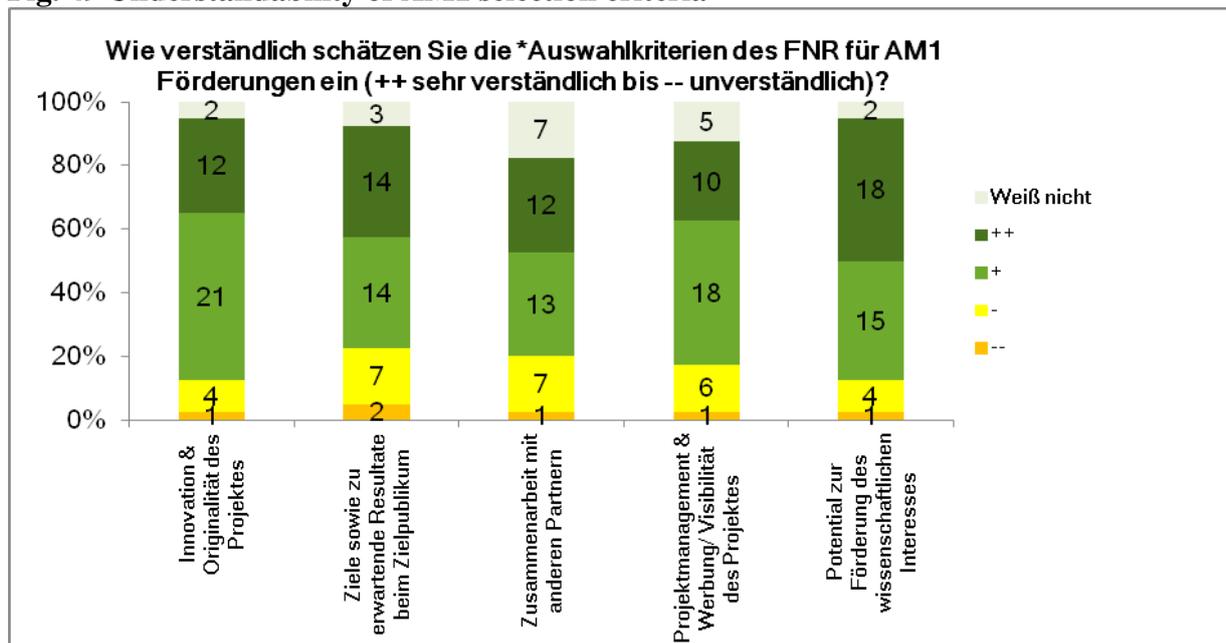
As determined by statistical analysis, only 31.27% of the actual costs of an AM1 activity are covered by AM1 funding. This is rather low, considering the impact of this measure and the fact that the majority of applicants to AM1 are schools and non-profit organisations, which depend to a high degree on external funding. In the light of international tendencies such as the German initiative ‘Science in Dialogue’ to enhance dialogue between the research community and the general public, we recommend increasing the proportion of cost coverage for AM1 projects by expanding the eligible costs to include costs such as lecture fees for speakers and personnel to support the initiation of AM1 activities that have been requested by the stakeholders.

Understandability and quality of selection criteria

The FNR uses 5 selection criteria to select the applications to AM1 that are worth funding. We wanted to know how understandable and qualified these criteria are to applicants (Fig. 49).

Altogether, the majority of respondents considered the selection criteria for AM1 to be understandable. The least understandable criteria were ‘Cooperation with other partners’ and ‘Objectives and anticipated results for the target audience’, followed by ‘Project management & advertising/visibility of the project’. The most understandable criterion was ‘Innovation & originality of the project’.

Fig. 49 Understandability of AM1 selection criteria



Conclusions and recommendations

Strengthen AM1 as a funding tool

AM1 is an AM with high potential to meet the FNR's objectives and to promote scientific culture, making research and science understandable and interesting to the general public, especially for young people. As the majority of AM1 applicants are schools and non-profit organisations, we recommend promoting those activities that are important to face new societal challenges and to prepare the ground for research acceptance in the population.

In free comments at various points in our AM1 survey, as well as in interviews, AM1 applicants requested a reduction in the amount of information required for applications. We recommend strengthening this tool and encouraging more applications by increasing the flexibility and reducing the amount and type of documents that need to be provided, e.g., to allow meaningful description of the qualification of key speakers at conferences or lecture series (to date, CVs have to be provided for all speakers).

Merge AM1 'Promotion of Scientific Culture' and 'Promotion of Scientific Culture'

AM1, 'Promotion of Scientific Culture', is a funding programme to which institutions, schools, etc. can apply for funding of activities intended to make research and science understandable and interesting to the general public, especially the youngest generation. This programme is identical in name with the 'Promotion of Scientific Culture' (PSC) initiative, an initiative operated by the FNR to communicate and promote science and research to the general public and the young. The budget available for this initiative from the FNR is used to promote activities that are carried out either completely by an FNR team or together with external partners. Examples of such activities would be the Science Festival or Researchers' Night and Mr. Science. These projects are selected in response to an annual proposal submitted by the secretariat to the Board of Administration.

As both schemes have similar objectives, we recommend merging them, so that both are managed by the same FNR team. Such a combination would ease navigation through the

FNR's funding portfolio by potential applicants and could support further fine-tuning of activities intended to support dialogue in mutual benefit for the scientific community and society.

Communication scheme

There are differences in the communication behaviour of more research-driven applicants to AM2-4 and applicants to AM1, who are more oriented towards interactions with societal needs. AM1 applicants clearly prefer verbal communication and personal contact with the FNR staff, while AM2-4 applicants have a preference for first-hand written information.

In conclusion, we recommend that the FNR should be flexible in their communication concept and should place an emphasis on verbal communication and personal contact with AM1 applicants.

Amount of funding

AM1 was established as a co-funding model, dependent on the size/number of participants in the activities funded. However, the amount of co-funding, at 31%, is quite low and should be increased by the FNR to encourage further applications. Interviewees and respondents to our survey requested the inclusion of additional costs. We agree with these requests and recommend the inclusion of costs such as lecture fees for external speakers..

Understandability of the heading

Although there is no immediate need, we do think that there is still room for improvement and recommend changing the title 'Promotion of Scientific Culture' to a clear and more penetrating phrase so that these headings can function as easy-to-follow signposts in the search for targeted funding.

Additional recommendations

In our AM1 survey, respondents clearly stated the wish for the FNR raise support of the initiation and implementation of AM1 projects. We recommend the FNR should offer funding for personnel at research institutions to support the initiation of AM1 projects and to promote contact with the general public, at least for an initial phase.

We also suggest that the FNR should increase its efforts to involve actors from the private sector more actively in AM1 activities, in order to support the development of a culture of patronage, which is still missing in Luxembourg. Such initiatives would also be in line with ongoing developments in the FNR to strengthen ties between the academic and private sector.

6.3.2. AM2a

Applicants and beneficiaries of AM2a

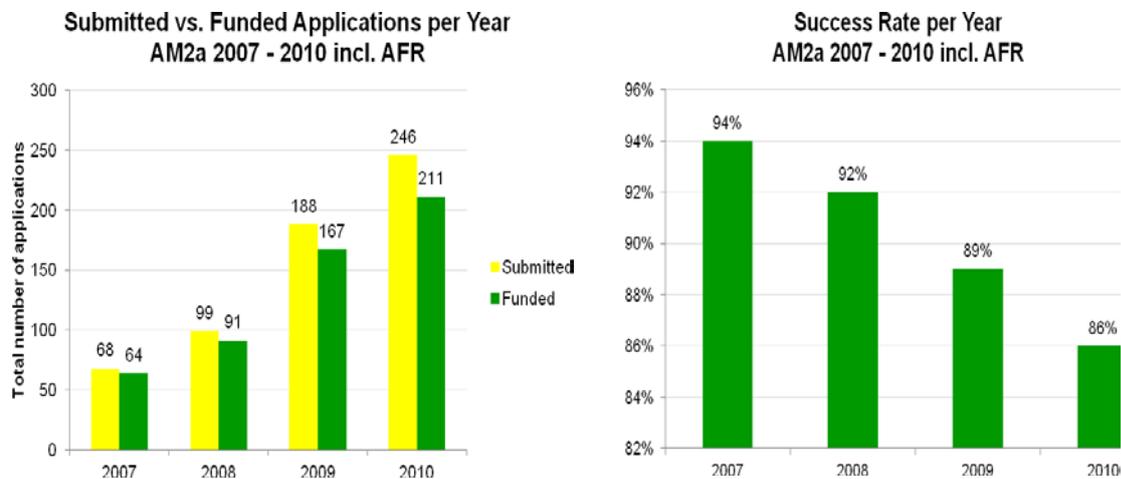
Between 2007 and 2010, 601 AM2a applications were submitted to the FNR, including 141 applications from AFR beneficiaries. These are no longer eligible for AM2a since the 1st of January, 2011. Not taking AFR beneficiaries in account, 321 applicants submitted 460 applications (1.4 applications per person). Fifty nine percent (270) of the applications were submitted by male applicants, and 41% (190) by female applicants. Applications submitted by each gender had similar success rates of 91% for male applicants and 89% for female applicants.

Tab. 21 Development of AM2a applications and approvals 2007 - 2010

2007-2010	Submitted	Funded	Success rate
Total	601	532	89%
Without AFR	460	417	91%
AFR**	141	115	82%

With an average success rate of 89%, the success rate of applications to AM2a is higher than the average success rate for all AMs altogether. However, when analysed in detail per year, a decrease in the success rate from 94% in 2009 to 86% in 2010 is seen, despite the increase in the total number of applications.

Fig. 50 Development of AM2a success rates 2007 - 2010



We also analysed the reasons for this decline. Six percent of all applications to AM2a were unsuccessful because they were not eligible to apply. When we asked applicants in our survey about the reasons why their applications were ineligible, they explained that the FNR had started to enforce the submission deadlines more rigorously, which these applicants simply failed to meet.

Tab. 22 Reasons for unsuccessful applications to AM2a

Category	Total number of applications	Percentages
Funded	417	90%
Ineligible	26	6%
Cancelled	3	1%
Retracted	14	3%
Total	460	100%

Beneficiaries ex territory

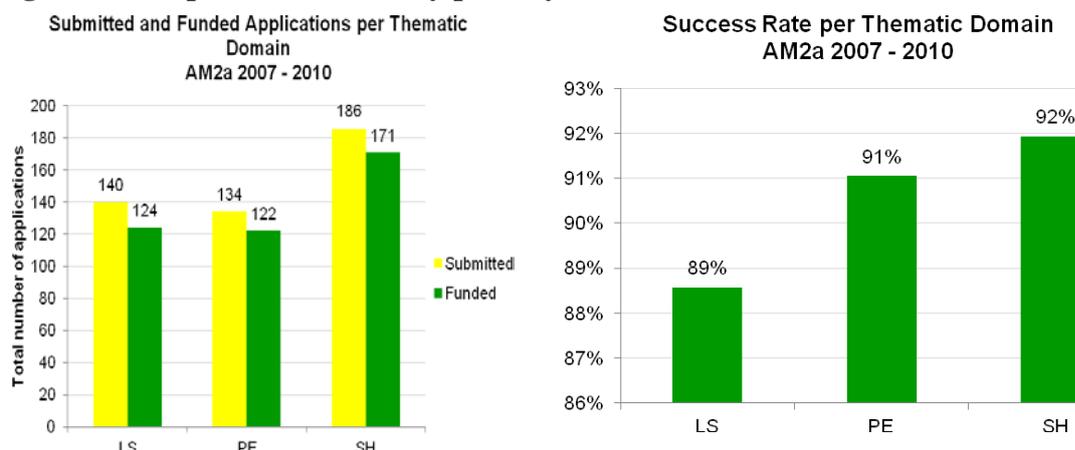
Taking all applications to AMs altogether, 17.44% of the applications were submitted by Luxembourg citizens who work outside Luxembourg. The majority of these applications were applications to AM2a, active participation in conferences abroad, constituting 52.3% of all AM2a applications (followed by 26.3% of the applications from the University of Luxembourg).

Although applicants ex territory constitute a large group of applicants, to our surprise, most representatives of public institutions with a research mission were not even aware of the existence of such a funding tool, which obviously does not play a very important role for their institution, if any at all. When asked about the need to offer funding opportunities for Luxembourg citizens living or working outside Luxembourg, the majority did not see any direct or indirect necessity to support researchers, predominately on the basis of the fact, that they are Luxembourg citizens. Potential benefits of this support, such as strengthening the link between this group of researchers and Luxembourg or supporting their return to Luxembourg were not perceived by them. As the eligibility of this group might originate from strategic considerations and political will, we do not recommend excluding this group from eligibility. However, we extend the idea of some suggestions made by interviewees to distinguish between the location of Luxembourg citizens ex territory, emphasising that they would expect the greatest benefits from support for such researchers living within the ‘greater region’ of Luxembourg, so that it would be worthwhile to add more direct benefits to such support, either by supporting participation in events held in Luxembourg, in particular in connection with participation in training courses in Luxembourg (AM2b).

Development of AM2a by priority domain

Most applications (40.4%) to AM2a were submitted by applicants doing research in the social sciences and humanities (SH), followed by 30.4% in life sciences (LS) and 29.1% in mathematics, physical sciences, information and communication technology, engineering, universe and earth sciences (PE), with success rates of 89% for applications in LS, 91% in PE and 92% in SH.

Fig. 51 Development of AM2a by priority domain



Sufficient cost coverage for conference participation by AM2a

As the contribution made by the FNR is based upon invoice, the average contribution directly reflects the cost of participation in a conference abroad. Looking at the average cost per conference participation (Tab.23), we see a steady increase in costs, but also variations in the

increase of costs that do not correlate directly with the increase in the number of applications submitted and funded for those years. The highest proportion of these costs consist of travel expenses. The cost of travelling to a conference in the USA is, on average, higher than that of attending a conference in Luxembourg's neighbouring countries. Variations in the increase in these costs might therefore be partly due to the general increase in costs as well as to variations in the location of conferences. The FNR provides €2,000 as the maximum amount of funding, an amount that is sufficient to cover the average cost of conference participation, with room for further increase. However, in our interviews and in the survey some applicants complained that their travel expenses were not sufficiently covered, e.g., to Australia. To avoid inhomogeneities, we therefore recommend if this funding tool should remain as a separate measure, that the maximum funding limit should be abolished and reimbursement handled strictly on the basis of invoices (see also the major findings for detailed discussion).

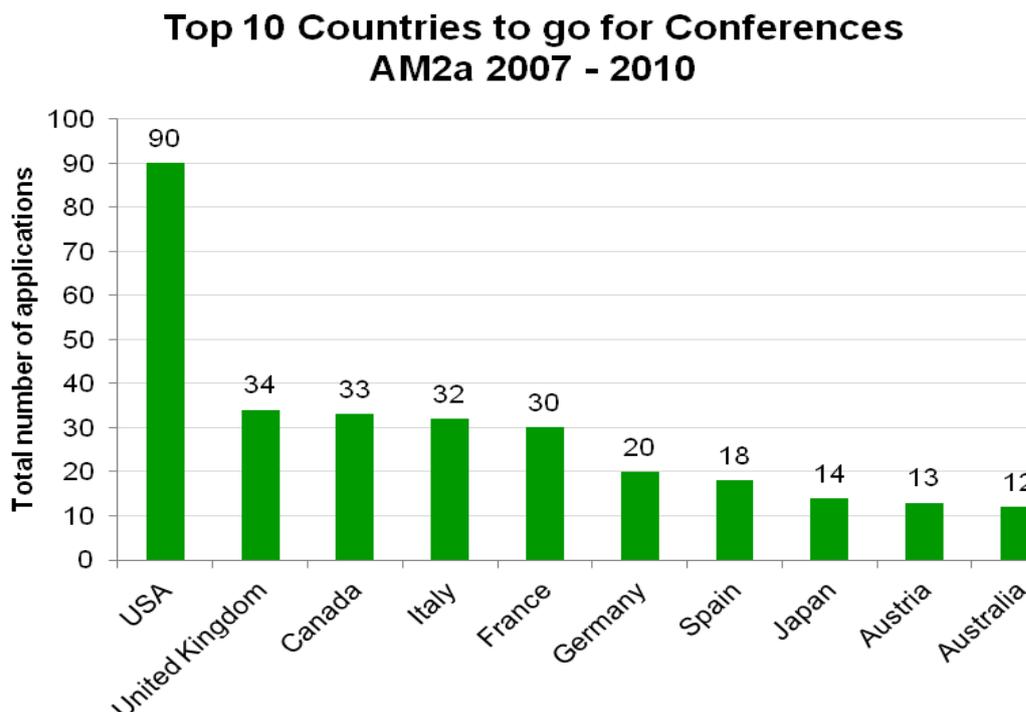
Tab. 23 Median cost of AM2a activities

Year	Median contribution	% increase in costs
2007	€1,055.51	
2008	€1,181.44	10.7%
2009	€1,218.91	3.1%
2010	€1,481.23	17.7%
Mean Total	€1,244	

Usage of AM2a

We investigated which countries most of the applicants attended conferences in. The top 10 countries that AM2a beneficiaries attended conferences in are the USA, the United Kingdom, Canada, Italy, France, Germany, Spain, Japan, Austria and Australia.

Fig. 52 Top 10 countries visited by AM2a beneficiaries



In our survey, we also investigated the top countries AM2 beneficiaries choose for their planned activity (conference participation abroad, training and/or OUT mobility) and how often these countries were visited between 2007 and 2010. The picture was similar to our statistical results, confirming the USA as the No. 1 destination. Taking all of the AM2 measures altogether, AM2 beneficiaries visited 51 countries a total of 393 times between 2007 and 2010. Nine of these countries received between 11 (Portugal) and 71 (USA) visits, accounting for almost 63% (247 out of 393) of all visits by AM2 beneficiaries. The top 8 countries that are most frequently visited by AM2a beneficiaries are the same as in our statistic analysis as well as in our survey and reinforce these exchanges as the major channels of exchange between Luxembourg and other countries.

Tab. 24 Countries with more than 10 visits by AM2a beneficiaries

County	Number of visits
USA	71
France	34
Germany	29
Italy	29
United Kingdom	27
Canada	19
Spain	14
Australia	13
Portugal	11
Total	247

Tab. 25 Where do the PROs send their students/PhDs for conferences abroad?

Country	Université du Luxembourg	Centre de Recherche Public Henri Tudor	CEPS/INSTEAD	Centre de Recherche Public de la Santé	Centre de Recherche Public Gabriel Lippmann	Total
USA	30%	14%	27%	35%	33%	27%
Canada	9%	9%	30%	17%	0%	13%
France	9%	24%	7%	17%	0%	12%
United Kingdom	11%	12%	13%	9%	0%	10%
Italy	9%	14%	7%	9%	0%	9%
Spain	13%	6%	0%	0%	0%	7%
Germany	8%	3%	0%	9%	0%	6%
Australia	5%	6%	7%	0%	0%	5%
Japan	4%	6%	0%	4%	22%	4%
Portugal	1%	6%	9%	0%	0%	4%
Austria	1%	0%	0%	0%	45%	3%
Total	100%	100%	100%	100%	100%	100%

When we look at the PROs of Luxembourg individually, they have clear preferences for visiting certain countries: 30% of all AM2a-funded visits by applicants from the UL are to the USA, 24% of all AM2a-funded visits by applicants from the CRP Henri Tudor are to France, 35% of all AM2a-funded visits by applicants from the CRP de la Santé are also to the USA, 45% of all AM2a-funded visits by applicants from the CRP Gabriel Lippmann are to Austria, with the USA strikingly in second place, with 33% of the visits being to the USA and 30% of all AM2a-funded visits by applicants from the CEPS/INSTEAD being to Canada, almost on a par with 27% to the USA.

Most AM2a beneficiaries give oral presentations at conferences

As the impact of participation in a conference depends, amongst other things, on the kind of contribution made by the beneficiary to the conference, we analysed the type of participation. Between 2007 and 2010, 71% of AM2a beneficiaries give oral presentations, 128 presented a poster, 1% functioned as a member of an evaluation committee, and 1 beneficiary acted as chairman of a conference.

Tab. 26 Type of conference participation by AM2-4 beneficiaries 2007-2010

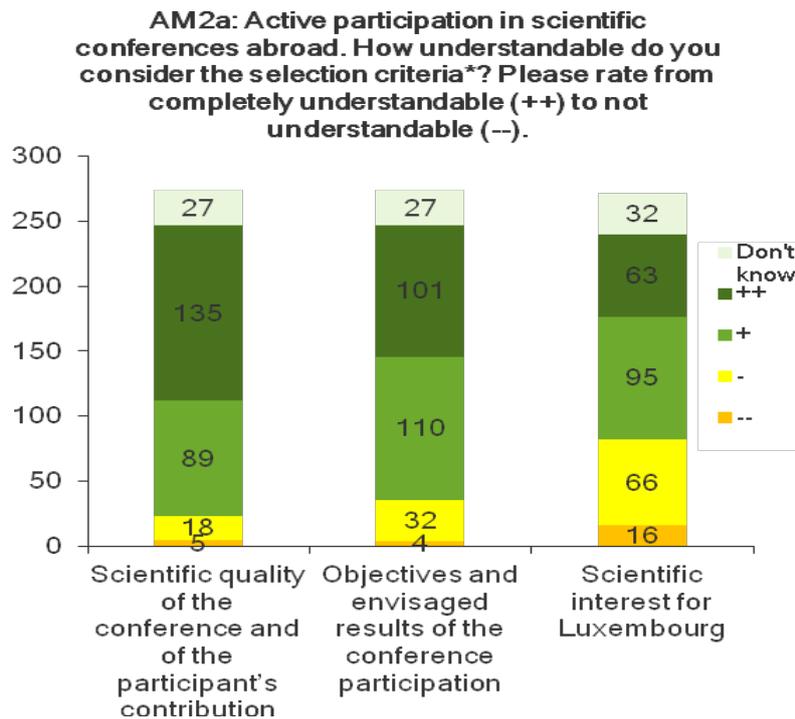
Type of presentation	Number of beneficiaries	%
Oral	327	71%
Poster	128	28%
Eval. comm.	4	1%
Chairman	1	0.2%
Total	460	

Understandability and quality of selection criteria

The FNR uses 3 selection criteria to select the applications to AM2a that are worth funding. We wanted to know how understandable and qualified these criteria are to applicants.

In the questionnaire, most applicants considered the criterion ‘Scientific quality of the conference and of the participant’s contribution’ to be understandable, followed by the criterion ‘Objectives and envisaged results of the conference’, while 30% of the respondents questioned the understandability of ‘Scientific interest for Luxembourg’ or considered it not to be understandable at all. Twenty four respondents took the opportunity to comment on these criteria, 11 reflecting on the ‘Scientific interest for Luxembourg’, 9 reflecting on ‘Scientific quality of conference’ and one reflecting on ‘Objectives and envisaged results of the conference’. Here are some of the comments: ‘Scientific interest for Luxembourg must be refined: Does it mean that researchers already work in that field, that industries are being developed, that it is in the field of "plans de développement" written between CRPs and ministry?’ ‘I think that it is difficult to specify "scientific interest for Luxembourg", since research does not and should not follow national interests’ or ‘As a general comment, the "scientific interest for Luxembourg" is a very vague requirement, since this can mean anything. Gaining scientific knowledge in a wide variety of research fields represents, in my opinion, an interest for Luxembourg in any way, and a researcher should be primarily judged by the quality of his/her output rather than the question whether this output is of "scientific interest for Luxembourg"’ etc.

Fig. 53 Understandability of AM2a selection criteria



In the reflections on the criterion ‘Scientific quality of the conference and of the participant’s contribution’ respondents discussed the term ‘scientific quality’. Here are some examples: ‘Scientific quality is hard to assess stating the controversies about the quality of scientific publications (number of articles, of quotation, first author etc.). Should we evaluate the quality of a lecturer/keynote speaker by their level in a research organisation or their number of articles in the presented area? etc.’ or ‘How can you assess the quality of the conference? It can be very specific. What is a "good" or "bad" conference? It is highly dependent on your objectives.’, etc.

Eligibility criteria

Many respondents to our surveys as well as the interviewees complained about the age limit for eligibility of up to 4 years after completion of the PhD. Of course, when merged into the project context of the Core, Attract, Inter and Perl programmes, costs such complaints elapse, as costs for participation in conferences abroad are eligible costs within the framework of FNR-funded projects.

Conclusions and recommendations

Allocation into the project context

To increase flexibility and to simplify the funding process, we recommend allocating AM2a to the context of FNR-funded projects (Core, Inter, Pearl, Attract). This will help to avoid inhomogeneities and unequal treatment. Young researchers up to 4 years after completing their doctorate and PhD students should receive the same amount of funding as AFR beneficiaries, when paid in the context of an FNR-funded project (not AFR beneficiaries, as they are already provided with a lump sum) to cover all costs currently eligible under AM2a, reimbursement taking place by submission of a project invoice.

Amount of funding

In AM2a, upon approval of an application, the FNR grants a lump sum of €2,000. With median costs of €1,244, this lump sum is sufficient to cover the average costs of conference participation. The upper limit for cost coverage under these measures is the lump sum provided. However, these sums are not paid out at the time of approval, as reimbursement subsequently follows on the basis of the invoice submitted for the actual costs. If the costs of an activity are lower than the lump sum granted, they are completely covered. The remainder of the lump sum flows back into the FNR's budget. If the costs of an activity exceeded the lump sum granted, the beneficiaries have to cover the excess costs. In cases where the costs exceeded the lump sum, this leads to a number of inhomogeneities and unequal treatment of beneficiaries.

Against the background of the other funding tools operated by the FNR, we recommend allocating AM2a to the context of FNR-funded projects (Core, Inter) and people (Pearl, Attract). This will have the advantage that the lump sums granted can be used much more flexibly by researchers within the budgetary flexibility rules for FNR-funded projects than when drawn upon the measures currently offered. For example, should the costs for participation in a conference be higher than the current lump sum of €2,000 within the project context, the remainder can be covered, within the range of budgetary flexibility, by the remaining approved budget for the project. If the actual costs were less than the lump sum granted, these funds can be used where necessary within the context of the project. Another major source of complaints in our interviews as well as in the survey was insecurity that the actual reimbursement may be reduced. If AM2a were allocated to the project context, reimbursement, e.g., daily allowances, could be handled according to institutional rules, creating greater security. Also, another source of complaint up to now expressed in interviews as well as in the survey, was that applications to AM2a are only possible once a year. Here, flexibility would be also increased, as the intervals between AM2a activities would depend on the necessities during the approved duration of the project. They could then be utilised very flexibly, at any time within the project time frame provided, without having to go through application and selection procedures. Ensuring the scientific quality of the conferences participated in would then depend on approval by the PhD supervisor or the director of a research lab (Postdoc).

Selection criteria

For the selection criterion 'in the interests of Luxembourg': We agree with the argumentation of the applicants and suggest deleting this criterion as it is a weak criterion that has a wide range of interpretation, leading to more confusion rather than contributing to selection of the best applications.

Change the selection criterion 'Scientific quality of the conference and of the participant's contribution'. We recommend replacing the term 'scientific quality' of the conference with 'scientific relevance' of the conference, to better account for the wide range of conceivable constellations that can contribute to the value of a conference.

Additional recommendations

Supporting the compatibility of family and profession has only come into the focus of national funding organisations such as the FWO (Belgium) recently and had been a desideratum, identified and provided, in particular, for single women, by foundations like L'Oréal International and the L'Oréal UNESCO initiative (France). To account for this trend, we recommend the inclusion of costs such as e.g. day care as eligible costs into AM2a for beneficiaries who are parents with small children while they are away at conferences.

6.3.3. AM2b

Applicants and beneficiaries of AM2b

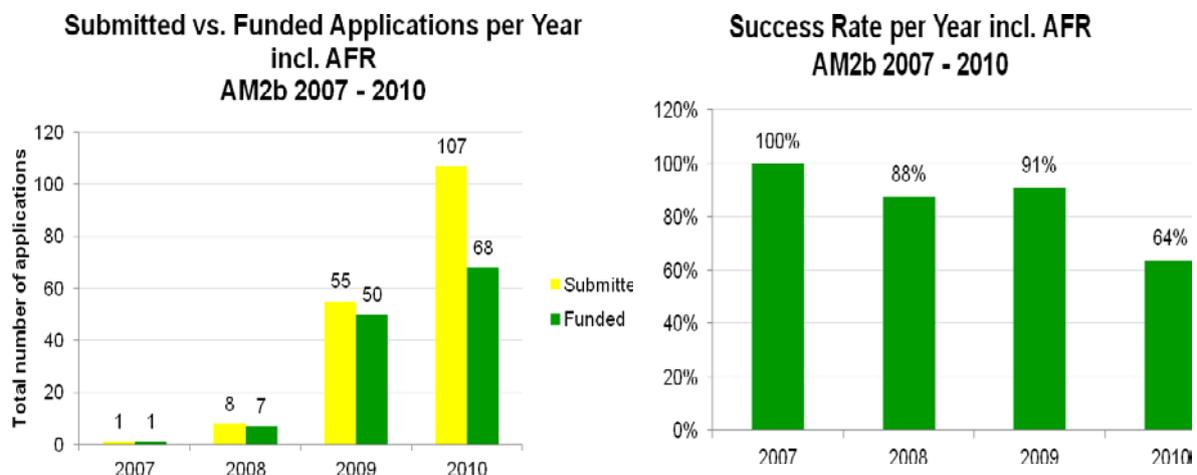
Between 2007 and 2010, 171 applications to AM2b were submitted to the FNR, including 86 applications from AFR beneficiaries. These are no longer eligible for AM2b since the 1st of January 2011. Not taking AFR beneficiaries into account, 82 applicants submitted 90 applications. Sixty one percent (55) of the applications were submitted by male applicants, and 39% (35) by female applicants. Applications submitted by each gender had similar success rates of 73% for male applicants and 71% for female applicants.

Tab. 27 Development of AM2b applications and approvals 2007 - 2010

2007-2010	Submitted	Funded	Success Rate
All	171	126	74%
Without AFR	90	65	72%
AFR**	81	61	75%

With an average success rate of 74%, the AM2b success rate is below the average success rate for all AMs taken altogether. However, when we analysed the success rate per year, it dropped significantly in 2010.

Fig. 54 Development of AM2b success rates 2007 - 2010



We also analysed the reasons for this drop. The situation was found to be similar to that for AM2a. The highest proportion of unsuccessful applications were ineligible applications (17). Of these, 12 applications were ineligible because they did not meet the deadline.

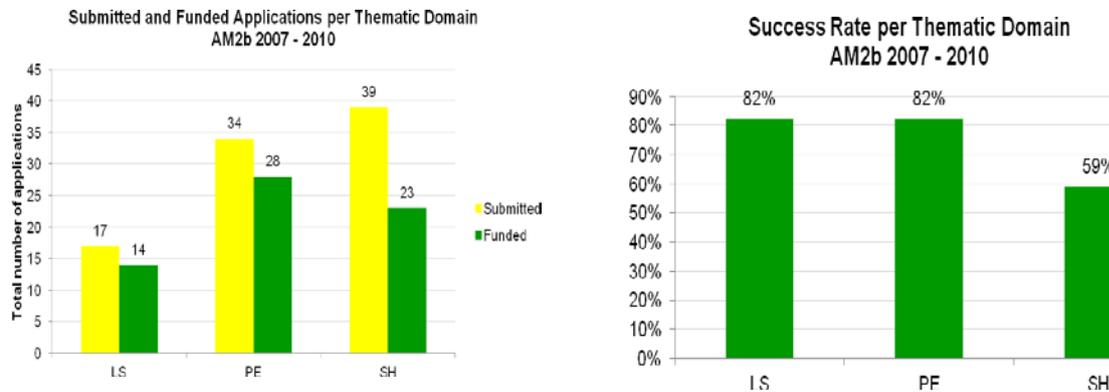
Tab. 28 Reasons for unsuccessful applications to AM2b

Category	Submitted Applications	Percentages
Rejected	6	7%
Funded	65	72%
Ineligible	17	19%
Retraction	2	2%
Total	90	

Development of AM2b by priority domain

Most applications (43.3%) to AM2b were submitted by applicants doing research in the social sciences and humanities (SH), 37.8% in mathematics, physical sciences, information and communication technology, engineering, universe and earth sciences (PE) and 18.9% in life sciences (LS), with success rates of 82% for applications in LS, 82% in PE and 59% in SH.

Fig. 55 Development of AM2b by priority domain



We analysed the striking difference in the success rate of applications from the field of LS and PE to SH in greater depth.

Fig. 56 Applications submitted and funded by domain and year (2007-2010)

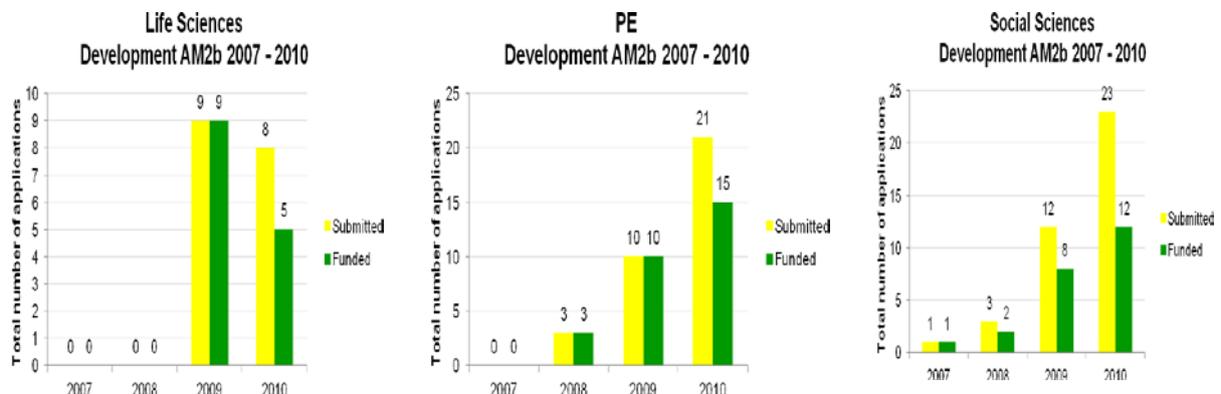


Fig. 57 Success rates by domain and year (2007-2010)



Even though applicants from the social sciences were the first to apply for AM2b in 2007, followed by applicants in PE in 2008 and applicants in LS in 2009, the success rate dropped over time, suggesting that the experiences of applying were not necessarily transmitted within this group. Due to the enforcement of application deadlines by the FNR, as discussed previously, the success rate dropped in 2010 in all three domains.

Cost coverage by FNR funding

Tab. 29 Median cost of AM2b activities

Median contribution FNR	Amount in EUR
2007	1,807.03*
2008	769.89
2009	1,169.05
2010	1,396.42
Median total	1,181.09

Only one application was funded in 2007

Going into programme details, the actual AM2b measure consists of 2 sub-programmes, ‘training of researchers abroad’ and ‘summer schools in Luxembourg’. However, the latter was only recently introduced by the FNR and only 3 applications for summer schools were submitted to the FNR within the time period of our evaluation, 2 being successful and 1 being rejected.

The vast majority of the contributions by the FNR reported therefore reflect funding for training of researchers abroad. As the contribution by the FNR is based on invoice, the average contribution directly reflects the cost of participation in training courses abroad. Looking at the average cost per training course, we see a steady increase in costs, which might correlate primarily with a general increase in costs. Also, differences in the location of training courses and thus in travel expenses might be reflected by this increase in costs. The FNR provides €2,000 as the maximum amount of funding, an amount that is sufficient to cover the average cost of conference participation, with room for further increase. However in order to avoid inhomogeneities, we recommend that the maximum funding limit should be abolished and reimbursement handled strictly on the basis of invoices.

Usage of AM2b training of researchers abroad

The top 5 countries AM2b beneficiaries went abroad to for short term training courses differs from the top countries AM2a beneficiaries go to for conferences. Here, France takes the lead, followed by the United Kingdom, Germany, Italy and the USA only in 5th place.

Tab. 30 Top 5 countries AM2b beneficiaries participated in training courses in

Country	Continent	Applications submitted
France	Europe	16
United Kingdom	Europe	11
Germany	Europe	9
Italy	Europe	8
USA	America	7

When we looked at which countries the PROs send their students and Postdocs to for training, the picture was not clear for all research institutions. Preferences were only apparent for applicants from the CRP Henri Tudor to go France, and for applicants from the CEPS/INSTEAD to go to the United Kingdom for training. Considering the low number of applications in total, however, one has to be careful not to over-interpret these results as indicators of the leading countries in a specific field of research, as they might equally well reflect institutional collaborations or partnerships.

We also looked at the type of training beneficiaries chose to attend. Sixty nine percent of the beneficiaries took a short term training course, while 31% attended a summer school. The average length of the training courses was 7.6 days. Most beneficiaries (20) attended training courses lasting 3 days, followed by training courses lasting 5 and then 12 days (even numbers)

Tab. 31 Where do the PROs send their students/PhDs for training abroad?

Country	Centre de Recherche Public de la Santé	Centre de Recherche Public Henri Tudor	CEPS/INSTEAD	Université du Luxembourg	Total
France	3	9		3	15
United Kingdom	1		6	3	10
Italy		1	2	4	7
Germany	1	3		3	7
Luxembourg*		2		5	7
USA	1	1	1	2	5
Spain	2			3	5
Belgium		1		3	4
Slovenia	3			1	4
Netherlands		1		1	2
Iceland				2	2
Austria				2	2
Australia				1	1
Cameroon				1	1
Costa Rica	1				1
Denmark				1	1
France		1			1
Jordan			1		1
Croatia	1				1
Switzerland		1			1
Total	13	20	10	35	78

Tab. 32 Duration of training courses attended by AM2b beneficiaries

Duration in days	Total number of applications submitted
1	2
2	9
3	20
4	8
5	10
6	7
7	2
8	2
10	3
11	2
12	10
13	3
14	5
18	2
19	1
26	1
30	1
31	2
Total	90

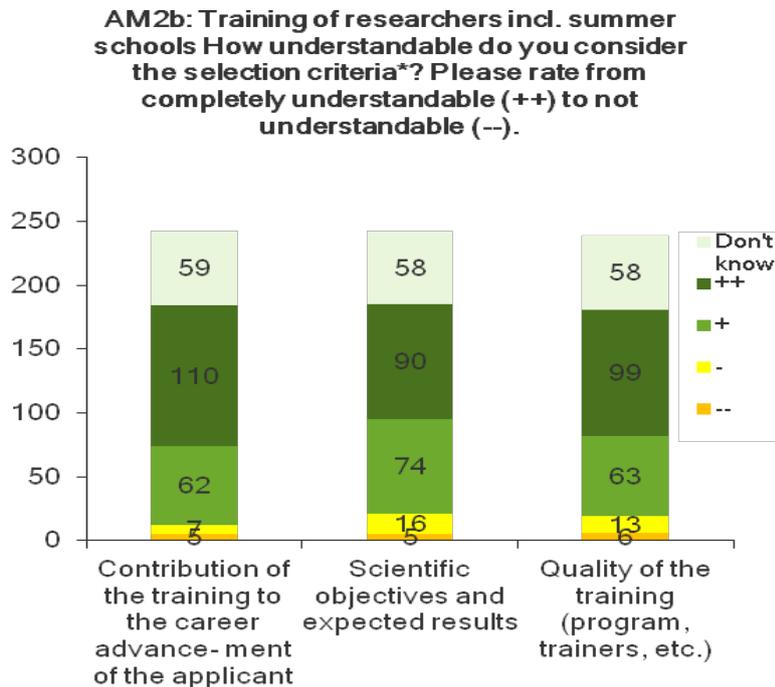
Within this measure, 2 summer schools that took place in Luxembourg were funded, lasting 3 and 2 days respectively.

Understandability and quality of the selection criteria

The FNR uses 3 selection criteria to select the applications to AM2a that are worth funding. We wanted to know how understandable and qualified these criteria are to applicants. In the questionnaire, most respondents considered the selection criteria to be understandable. Five respondents took the opportunity to freely comment on these criteria, reflecting upon the criterion ‘Quality of the training (programmes, trainers, etc.)’. These respondents questioned how the participants could know in advance whether the training would be good.

We consider this question to be symptomatic of the situation in AM2b. As 41.1% of the respondents to our survey were 1-3 years into their PhD or up to 4 years after completing their PhD, we are looking at a rather young group of researchers. In our opinion, this discussion indicates that it is asking too much of young applicants with limited experience to judge and decide where to go for training courses. Training is an essential part of their education. For these young scientists, training should be integrated into the educational concepts. We therefore recommend integrating the participation in trainings for researchers with research experience of up to 4 years after completing their doctorate into educational concepts or merging it into the project context, rather than offering it as a separate measure.

Fig. 58 Understandability of AM2b selection criteria



In case of allocation of this programme to project context, the criterion ‘Contribution of the training to the career advancement of the applicant’ should be changed to ‘Contribution of the training to project advancement’.

The other sub-programme of AM2b, ‘summer schools’, which had only recently been introduced by the FNR, was suffering from start-up problems, with only 3 applications submitted by the end of 2010. This funding tool had been rated as quite important by the stakeholders, who saw an increasing need for this financial support in the near future in the light of an increase in training courses offered to young scientists and the planned development of a structured doctoral education programme. We agree with this argumentation. As these developments are ongoing, but yet not implemented, we recommend keeping this funding tool and strengthening it. In the long run, however, we recommend integrating this funding tool into structured doctoral education programmes.

Conclusions and recommendations

Allocation to the project context

To increase flexibility and simplify the funding process, we recommend allocating AM2b in the current situation, with structured doctoral education programmes not yet fully implemented in Luxembourg, to the context of FNR-funded projects (Core, Inter, Pearl, Attract). This will help to avoid inhomogeneities and unequal treatment. Young researchers up to 4 years after completing their doctorate and PhD students should receive the same amount of funding as AFR beneficiaries, when paid in the context of an FNR-funded project (not AFR beneficiaries, as they are already provided with a lump sum) to cover all costs currently eligible under AM2b, reimbursement taking place by submission of a project invoice.

Amount of funding

In AM2b, upon approval of an application, the FNR grants a lump sum of €2,000. With average costs of €1,181, this lump sum is sufficient to cover the average costs of participation in short training courses abroad. The upper limit for cost coverage under these measures is the lump sum provided. However, these sums are not paid out at the time of approval, as reimbursement subsequently follows on the basis of the invoice submitted for the actual costs. If the costs of an activity are lower than the lump sum granted, they are completely covered. The remainder of the lump sum flows back into the FNR's budget. If the costs of an activity exceeded the lump sum granted, the beneficiaries have to cover the excess costs. In cases where the costs exceeded the lump sum, this leads to a number of inhomogeneities and unequal treatment of beneficiaries and a high workload for applicants as well as for the FNR.

Against the background of the other funding tools operated by the FNR, we recommend allocating AM2b to the context of FNR-funded projects (Core, Inter) and people (Pearl, Attract). This will have the advantage that the lump sums granted can be used much more flexibly by researchers within the budgetary flexibility rules for FNR-funded projects than when drawn upon the measures currently offered. For example, should the costs for the training abroad be higher than the current lump sum of €2,000 within the project context, the remainder can be covered, within the range of budgetary flexibility, by the remaining approved budget for the project. If the actual costs were less than the lump sum granted, these funds can be used where necessary within the context of the project. Another major source of complaints in our interviews as well as in the survey was insecurity about the actual reimbursement. If this were allocated to the project context, reimbursement, e.g., daily allowances, could be handled according to institutional rules, creating greater security. Also, another source of complaint up to now expressed in the interviews as well as in the surveys, was that applications to AM2b are only possible once a year. Here, flexibility would also be increased, as the intervals between AM2b activities would depend on the necessities during the approved duration of the project. They could then be utilised very flexibly, at any time within the project time frame provided, without having to go through application and selection procedures. Ensuring the scientific quality of the conferences participated in would then depend on approval by the PhD supervisor or the director of a research lab (Postdoc), consistent with the above recommendation to emphasise the quality of FNR-funded activities.

Selection criteria

For funding within project context, replace 'Contribution of the training to the career advancement of the applicant' with 'Contribution of the training to the project advancement'.

Eligibility criteria

For the organisation of summer schools, we recommend not to request that applicants raise registration fees. Rather, leave how to obtain additional funding for their activities up to them, a request expressed by applicants of AM3 (organisation of conferences), as in some instances this is not common.

Summer schools – keep this tool and integrate into structured doctoral education programmes in the future

For the organisation of summer schools, with 2 approvals in the period 2007 -2010, there was not sufficient data available to provide clear predictions. However, we do recommend keeping and strengthening this funding tool, which has a high impact on national visibility, also in the light of the planned development of a structured doctoral education programme in Luxembourg. Should a structured doctoral education programme be sufficiently implemented

in Luxembourg, however, the FNR should reconsider allocating this funding tool to this educational framework.

Additional recommendations

Supporting the compatibility of family and profession has only come into the focus of national funding organisations such as the FWO (Belgium) recently and had been a desideratum, identified and provided, in particular, for single women, by foundations like L'Oréal International and the L'Oréal UNESCO initiative (France). To account for this trend, we recommend the inclusion of costs such as e.g. day care as eligible costs into AM2b for beneficiaries who are parents with small children while they are away for training.

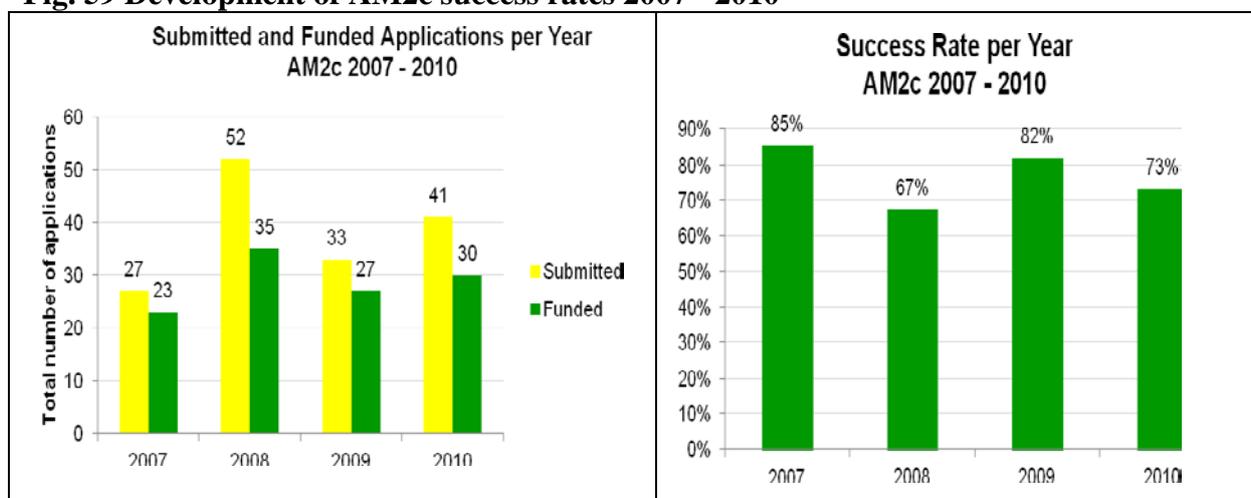
6.3.4. AM2c

Applicants and beneficiaries of AM2c

Between 2007 and 2010, 153 applications to AM2c were submitted to the FNR by 66 applicants (2.3 applications per person). This measure consists of two sub-programmes, the IN mobility of researchers and the OUT mobility of researchers. Between 2007 and 2010, 113 applications (73.9%) were submitted for IN mobility and 40 applications (26.1%) for OUT mobility of researchers. Some 86.9% (133) of the applications were submitted by male applicants, and 13.1% (20) by female applicants, thus making this a measure that is clearly dominated by male applicants. High numbers of male applicants might be explained by the application population of AM2c, which consists to a high degree of directors of research departments and institutions, who are, reflecting the structure of the research systems and career structures in general, mainly male. This might also, in part, in particular looking at the beneficiaries of the OUT mobility, be due to family reasons and the lack of financial or career related incentives in Luxembourg.

With an average success rate of 75%, the success rate of AM2c is below the average success rate of 84% for all AMs taken altogether, in particular due to a drop down to 67% in 2008. The success rate for AM2c Out and AM2c IN applications is equal.

Fig. 59 Development of AM2c success rates 2007 - 2010



We analysed the reasons for the below-average success rate of AM2c in greater depth. Ten percent of all applications to AM2c were unsuccessful because they had been withdrawn by

the applicants after being approved by the FNR, suggesting that the mobility did not take place or had been funded from other sources. Rejections of applications by the FNR due to poor quality were only in 2nd place (8%), followed by ineligible applications (5%) and cancelled approvals (2%).

Tab. 33 Reasons for applications to AM2c to be unsuccessful

Category	Number of applications	Percentage
Cancelled	3	2%
Ineligible	8	5%
Rejected	13	8%
Retracted	14	10%
Funded	115	75%
Total	153	

Comparison of the average duration of the IN and Out mobility

Tab. 34 Average duration of researcher visits in IN and OUT mobility

Number of months	IN mobility	OUT mobility
1	23	6
2	20	10
3	16	7
4	5	-
5	4	-
6	6	2
7	1	-
8	1	-
9	-	1
10	1	1
11	1	-
12	7	3
Total	85	30

In both measures, either visits with short stays, 1 or 2 months, or lasting 12 months are most prevalent.

More applications are submitted for IN than OUT mobility

In interviews and in our survey we enquired about the reasons for the significant differences and much higher number of applications for the IN than the OUT measure (Tab.35). We discovered that exchange in both directions, in and out, was considered to be of equal importance by the majority of our interviewees. However, with the exception of one CRP, other research and governmental institutions have no direct financial incentives or career advancements incentive, so the need for a researcher to leave Luxembourg to do research is not obvious, either for the profession as a researcher or for career advancement. Also, in particular for younger families, the lack of support in combining family and profession was named as an important reason for the lower number of applications for OUT mobility. As the percentage of male versus female applicants and beneficiaries is striking, we investigated gender aspects of both sub-measures in greater depth.

Tab. 35 Applications to AM2c IN and OUT

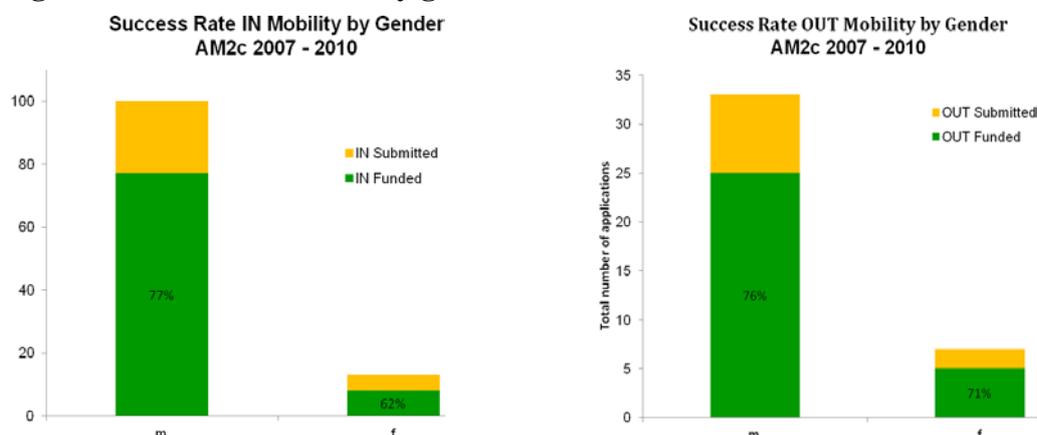
	IN	OUT	Total
Applications	113	40	153
Approvals	85	30	115
Success rate	75%	75%	

When we analysed the average success rates of male and female applicants for both measures we also saw striking differences.

The difference between the average success rate for IN mobility of male and female applicants, (77% vs. 62%) was particularly striking. This also held true for OUT mobility, with success rates of 76% and 71% respectively, although not quite as striking. However, we cannot analyse this aspect in greater depth using statistics, as the applicants and beneficiaries are not necessarily identical for AM2c, and any conclusions drawn by the statistical data provided by the FNR are limited.

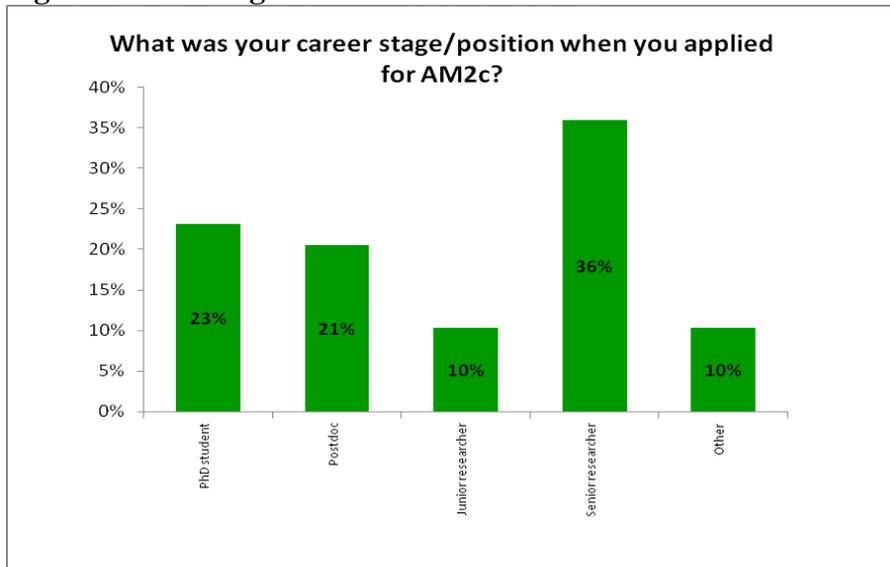
Considering the overall low number of female applicants to AM2c (there were 7 applications received from females for the OUT measure in the period 2007 to 2010, 5 funded, and 13 applications from females for the IN measure, 8 funded) this may indicate a tendency rather than a statistical relevance.

Fig. 60 AM2c success rates by gender



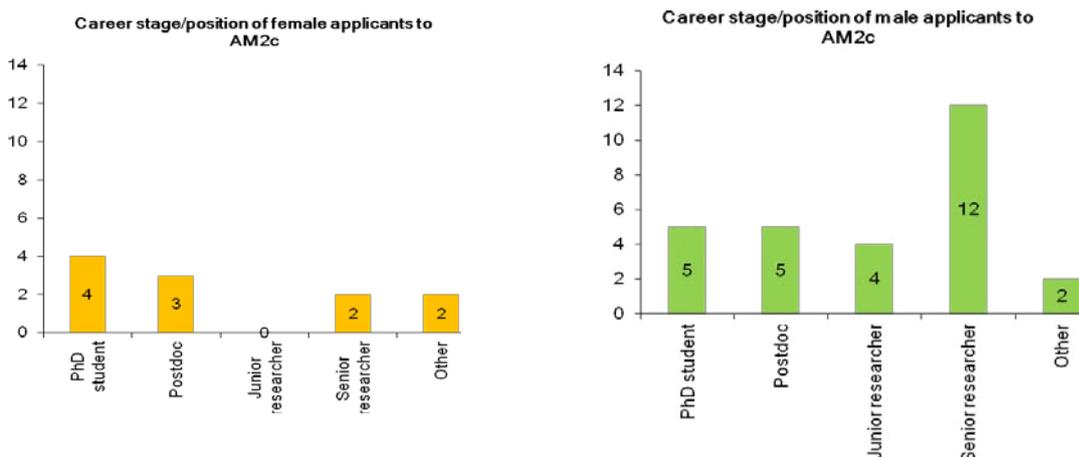
We therefore extended our analysis to ask respondents to our AM2-4 survey. In this survey 14.4% (37) of the respondents had applied to AM2c. Fifteen of these applicants had applied for OUT mobility and 22 respondents for IN mobility. Eleven of the 37 respondents to the survey who had applied to AM2c between 2007 and 2010 were female, and 26 were male. Most of them were at the career stage of senior researcher when they applied to AM2c.

Fig. 61 Career stages of AM2c beneficiaries



Looking into the gender specificities in greater detail, a shift towards senior researcher was obvious in the male applicant population compared to female applicants. Here the majority of females were PhD students or Postdocs, while male applicants were mostly senior researchers. In the light of general societal changes concerning career stages of females, the FNR should pay special attention to the fact that, of our respondents, no female junior researcher had applied to AM2c in the period 2007-2010.

Fig. 62 Career stages of AM2c beneficiaries by gender



Usage of AM2c

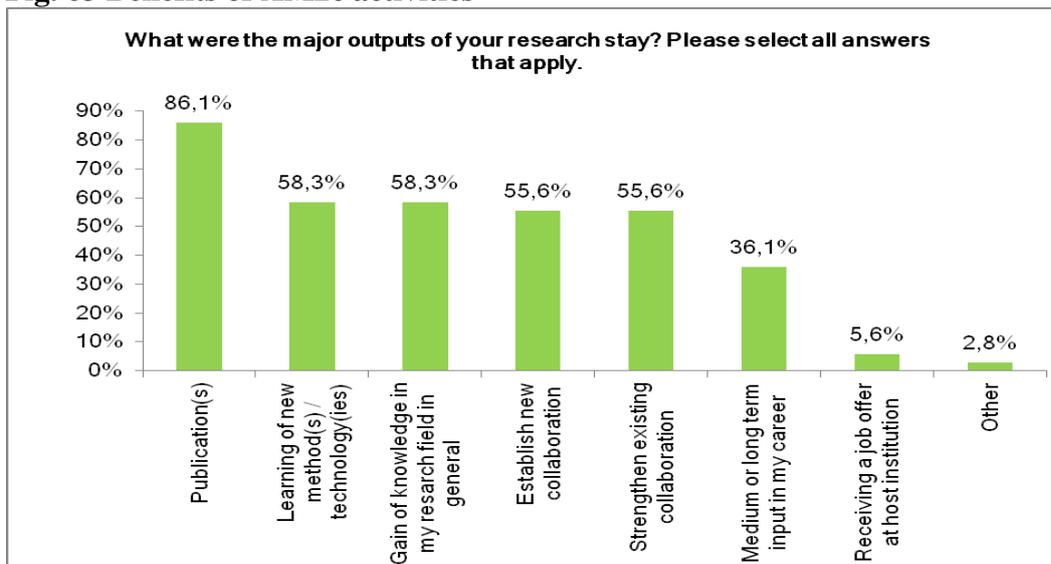
We investigated which countries most of the beneficiaries of OUT mobility go to and from which countries they are most likely to come to Luxembourg in the IN mobility programme. The top 5 areas AM2c beneficiaries go to are led by the USA (10), followed by Germany (5), France (4), the United Kingdom (4) Mexico (3) and Finland (1). The top 5 countries from which beneficiaries came to Luxembourg in the IN mobility programme between 2007 and 2010 were France (24), followed by Spain (10), the USA (9), China (6) and Germany (6).

Also, the top 3 in both exchange directions follow the major currents of exchange as determined for AM2a.

Major outputs of AM2c

86.1% of the AM2c activities undertaken by the respondents to our AM2-4 survey resulted in one or more publications. Other outputs such as ‘Learning new method(s)/technology(ies)’, ‘Gain of knowledge in my research field in general’, ‘Establishing new collaboration or strengthening existing collaboration’ were outputs of AM2c activities within a range of 50%. Less marked effects were also reported, with 36.1% in long or medium term inputs in the career, even resulting in one job offer (5.6%).

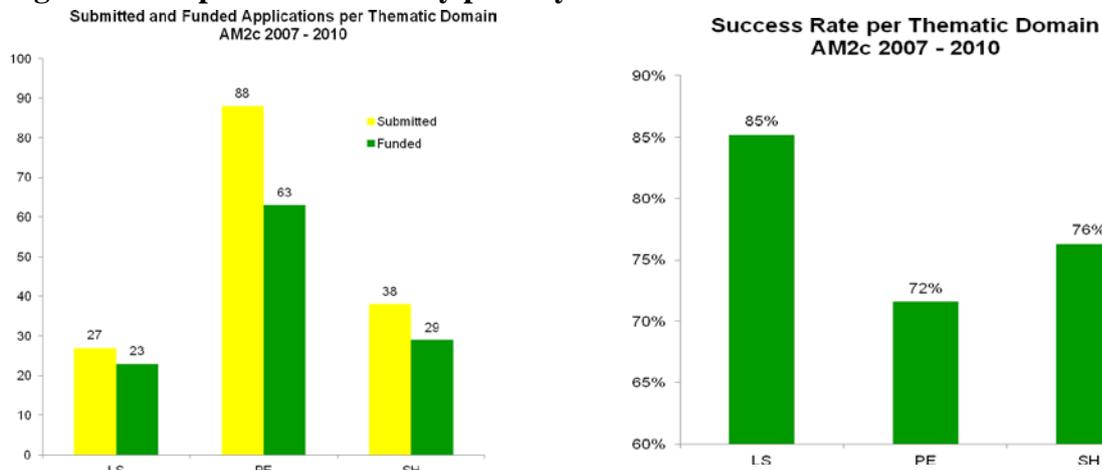
Fig. 63 Benefits of AM2c activities



Funded applications and success rate by priority domain

Most applications (57.5%) to AM2c were submitted by applicants doing research in mathematics, physical sciences, information and communication technology, engineering, universe and earth sciences (PE), followed by 24.8% in social sciences and humanities (SH) and 17.4% in life sciences (LS) with success rates of 85% for applications in LS, 72% in PE and 76% in SH.

Fig. 64 Development of AM2c by priority domain



Applications by type of mobility and institution

The top 3 places applications to AM2c come from are the University of Luxembourg (37%), followed by CRP Henri Tudor (33%) and Ceps/Instead (11%). As the number of applications for IN and OUT mobility differ significantly, also resulting in respective differences in the significance of interpretations, we did not perform any further analysis at this point.

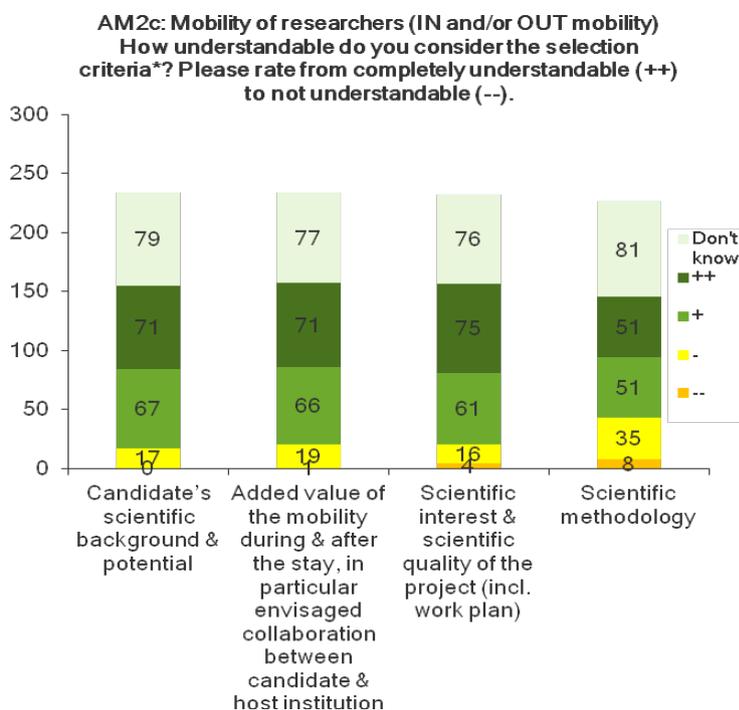
Tab. 36 Applications by type of mobility and institution

Applications by type of mobility	CRP de la Santé	CRP Gabriel Lippmann	CRP Henri Tudor	CEPS/INSTEAD	Musée national d'histoire naturelle	Université du Luxembourg	Total
IN	8	8	42	13	2	40	113
OUT	2	6	9	3	3	17	40
Total	10	14	51	16	5	57	153

Understandability and quality of the selection criteria

The FNR uses 4 selection criteria to select the applications that are worth funding. We wanted to know how understandable and qualified these criteria are to applicants.

Fig. 65 Understandability of AM2c selection criteria



In the questionnaire, most applicants considered the selection criteria for AM2c to be understandable. Eight respondents took the opportunity to freely comment on these criteria. Their suggestion were included in our in-depth discussions with FNR staff and resulted in the suggestion to change 'Scientific interest & scientific quality of the project (incl. work plan)' to 'Scientific relevance of the project' and to include 'Quality of host institution and host group' as a selection criterion for Out mobility.

Eligibility criteria

Up to now an eligibility criterion for AM2c is the requirement that applicants have to have spent at least 2 years at their home institution. A couple of respondents to our AM2-4 survey in various questions of the survey, as well as the majority of our interviewees did not consider this relevant. We want to follow-up their request and recommend deleting the eligibility criterion that applicants have to have spent a minimum of 2 years at their home institution before they are eligible to apply to AM2c. Both interviewees as well as respondents to the AM2-4 survey also said that more attention should be paid to supporting more senior researchers, as there are already plenty of funding options such as Core Junior or the AFR funding scheme for junior researchers. We agree with these suggestions and recommend strengthening AM2c to increase its emphasis on funding more senior researchers. AM2c has a high potential to fulfil major objectives of the FNR. An exchange of know-how and knowledge by distinguished researchers will have a dramatic multiplier effect on the visibility of research in Luxembourg.

Conclusions and recommendations

Strengthen AM2c as a funding tool

AM2c is an AM with high potential to meet the FNR's objectives and improve the position of research in Luxembourg in the international research landscape. We recommend strengthening this tool, similar to the 'Missions Scientifiques' offered by the FNRS or the travel grants for senior researchers offered by the FWO (Belgium). We recommend sharpening the profile of AM2c further in order to put greater emphasis on the support of more senior scientists for visits to Luxembourg as well as for researchers from Luxembourg to go abroad¹⁴. In particular, in the latter case, the FNR should bear in mind that the OUT mobility of researchers has so far been used much less than IN mobility and should include gender-specific aspects to raise the currently low number of female applicants. However, the FNR should also pay close attention to the planned budget (following actual developments more closely than prospective tendencies).

To attract and encourage applications from distinguished scientists, the FNR should manage this funding tool with high flexibility, in particular setting low restrictions on deadlines for applications and the requiring limited amounts of application and reporting documents. High flexibility should also be given to the content of the activities, e.g., allowing participation in the educational system by lecture series, etc. when applicable and interruptions of the visit by the exchange scientist to enable them to pursue their obligations at their original establishment, a typical feature of sophisticated programmes like the Feodor Lynen programme for senior scientists in Germany. To maintain scientific quality as the key criterion, the description of the planned project should be obligatory, albeit with room for changes to foster originality and innovation.

Amount of funding

In AM2c, upon approval of an application, the FNR grants a lump sum with a maximum allowance of €150/day; €750/week and €3,000/month, in addition to accompanying eligible costs. Considering the potential of this funding tool, especially with regard to senior scientists, we recommend that there should be no upper limit on cost coverage for these measures, rather basing reimbursement of the visiting scientist on their salary.

¹⁴ Guellec, D.; Cervantes, M.: International Mobility of Highly Skilled Workers: From Statistical Analysis to Policy Formulation, in: OECD (ed.): International Mobility of the Highly Skilled, Paris 2002, pp. 71-98.

Eligible costs

Supporting the compatibility of family and profession has only come into the focus of national funding organisations such as the FWO (Belgium) recently and had been a desideratum, identified and provided, in particular, for single women, by foundations like L'Oréal International and the L'Oréal UNESCO initiative (France). To account for this trend, we recommend the inclusion of costs such as day care as well as costs for accompanying family members as eligible costs under AM2c.

Eligibility of applicants

To account for all fields of science, a PhD or adequate accomplishments followed by a minimum of 5 years of research experience, similar to the criteria for fellowships for advanced researchers by the SNF (Switzerland) should be obligatory. However we also recommend removing the previous eligibility criterion, that applicants have to have spent a minimum of 2 years at their original establishment.

Funding duration

To allow also the exchange of senior researchers on sabbatical, the funding duration of AM2c should be up to 1 year. Depending on the length of stay, subdivisions of the exchange should be possible.

Selection criteria

Change the selection criterion 'Scientific interest & scientific quality of the project (incl. work plan)'. We recommend replacing the term 'Scientific interest & scientific quality' with 'scientific relevance' to better account for the wide range of conceivable constellations that can contribute to the value of the exchange.

We also recommend including 'quality of the host institution and the host group' as a selection criterion for Out mobility.

Additional recommendations

We recommend opening the measure up to include exchange between the private and academic sector, to increase the socio-economic value of this measure. Such a funding tool would supplement the current national funding tool 'secondement' of the Ministry of Economy and Foreign Trade, managed by Luxinnovations on the international scale and would follow general developments within the European research communities.

Luxembourg is a small country with limited resources for research, when compared globally. Exploitation and valorisation of research results is therefore imperative for its research and innovation system. 'From research to innovation' is the leading principle for the development of the European research system, implemented in the 8th Framework Programme of the European Union, Horizon 2020 - The Framework Programme for Research and Innovation', which is going to replace FRP7 on January 1st, 2013¹⁵. These principles also have to be implemented in the national context of the European research systems¹⁶. In Germany the national research funding organisation DFG has therefore established a separate funding programme, called 'Transfer Projects' to verify the results of basic research and to provide a framework for joint research by scientists and external partners such as industry, associations

¹⁵ Commission staff working paper impact assessment, final, 30.1.2011 of the European commission, accompanying the communication from the commission 'Horizon2020' – The framework programme for research and innovation'

Edler, J.; Fier, H.; Grimpe, C.: International Scientist Mobility and the Locus of Technology Transfer. ZEW Discussion Paper No. 08-082, Mannheim 2008.

¹⁶ Recommendations of the Wissenschaftsrat on German Science Policy in the European Research area; Bundesministerium für Bildung und Forschung (BMBF): Bundesbericht Forschung und Innovation 2008, Bonn; Berlin 2008 [= BMBF (2008b)]

and public institutions. In addition to this, they have included such transfer options in their highly prestigious Emmy Noether programme for the promotion of excellent young scientists and into funding of temporary principle investigators, allowing exchanges and transfer of projects from the academic to the private sector, with a focus on national exchanges, albeit with openings to a global level, when expertise is only available abroad. In Norway, the national funding organisation RCN includes companies in general into their funding schemes, be it for national or international exchange. They use guidelines for the amount of public R&D support that may be provided to companies as set out by the EEA Agreement. In accordance with these guidelines, the funding allocated by the Research Council will normally be in the range of 25 - 50 per cent of the total project costs, with an additional bonus of 10% for small and medium-sized enterprises.

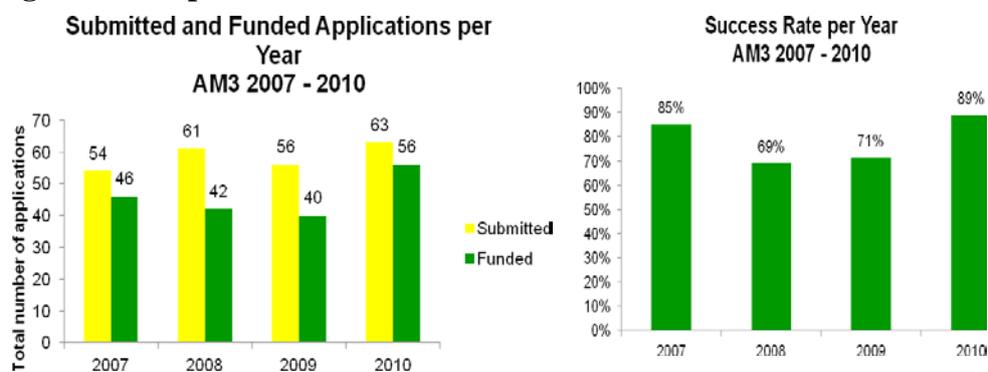
6.3.5. AM3

Applicants and beneficiaries of AM3

Between 2007 and 2010, 234 applications to AM3 were submitted to the FNR by public institutions or public bodies with a research mission, with an average success rate of 79%.

Despite the steady growth of the Luxembourg research system, the number of applications for funding of the organisation of a conference remained pretty steady, fluctuating around 59 applications per year. With an average success rate of 79%, the AM3 success rate is slightly lower than the average success rate for all AMs taken altogether. Reasons for unsuccessful applications ranged from being rejected (13%) as the most common reason, to retracted by the applicants (5%), being ineligible (2%) and finally cancelled by the FNR after approval (1%).

Fig. 66 Development of AM3 success rates 2007 - 2010



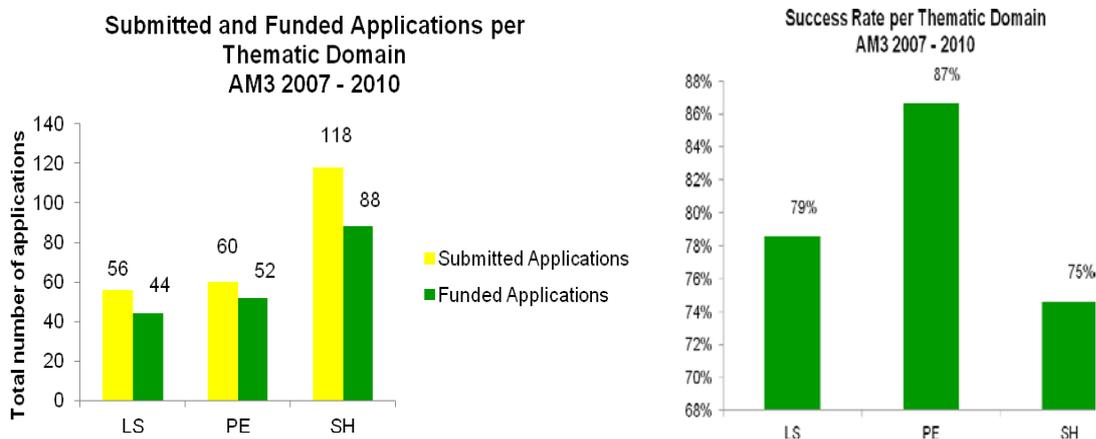
Tab. 37 Reasons for unsuccessful applications to AM3

Category	Number of applications	Percentage
Cancelled	3	1%
Funded	184	79%
Ineligible	5	2%
Rejected	31	13%
Retracted	11	5%
Total	234	100%

Development of AM3 by priority domain

Most applications (50.4%) to AM3 were submitted by applicants doing research in the social sciences and humanities (SH), 25.6% in mathematics, physical sciences, information and communication technology, engineering, universe and earth sciences (PE) and 23.9% in life sciences (LS), with success rates of 79% for applications in LS, 87% in PE and 75% in SH.

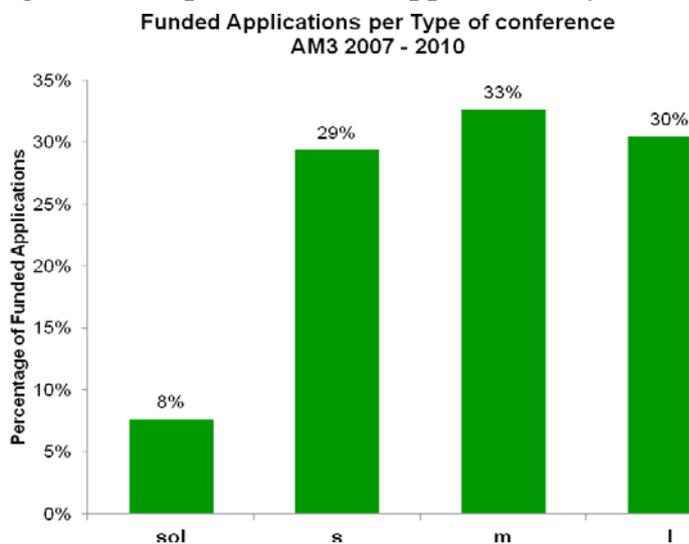
Fig. 67 Development of AM3 by priority domain



Development of AM3 applications by size of conference

Between 2007 and 2010, medium sized conferences with 51-100 participants were most commonly funded by the FNR, followed by large conferences with more than 100 participants, lecture series and small conferences with 20-50 participants.

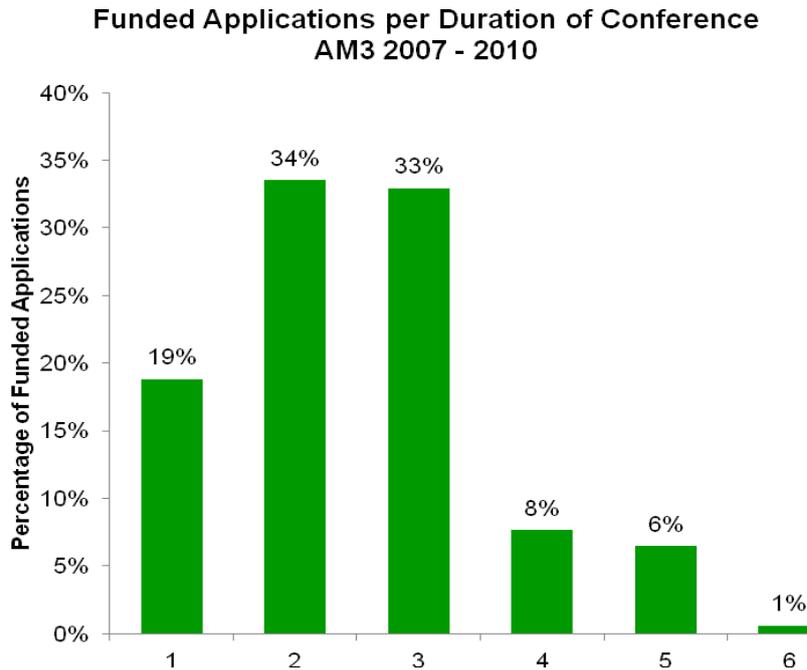
Fig. 68 Development of AM3 applications by size of conference



sol = series of lectures, *s* = small conference (20-50 participants), *m* = medium (51 – 100 participants), *l* = large (>100 participants)

Leaving out lecture series, most of these conferences lasted 2 to 3 days. Most of the FNR-funded conferences were organised by the University of Luxembourg.

Fig. 69 Duration of funded conferences (days)



Tab. 38 Duration of the conferences in relation to type of conference

Duration vs. type	Type of conference			Total
	s**	m**	l**	
Duration in days				
1	7	18	7	32
2	18	22	17	57
3	16	13	27	56
4	7	4	2	13
5	6	2	3	11
6		1		1
Total	54	60	56	170*

*For this analysis, the 14 series of lectures are disregarded, reducing the total number of funded applications for this section of the statistic to 170.

**s = small conference (20-50 participants), m = medium (51 – 100 participants), l = large (>100 participants)

Costs coverage of conferences

AM3 was established as a co-funding model, dependent on the size/number of participants in the events funded. Between 2007 and 2010 the FNR covered, on average, 26.37% of the actual costs of conferences. Support for AM3 activities is structured in 4 stages: S (20-50 PN) up to €15,000, M (51-100 PN) up to €20,000, L¹⁷(>100 PN) up to €25,000 and lecture series up to €1000/lecture.

Most of the FNR funding was granted for small sized and large conferences lasting 3 days and medium sized conferences lasting 2 days.

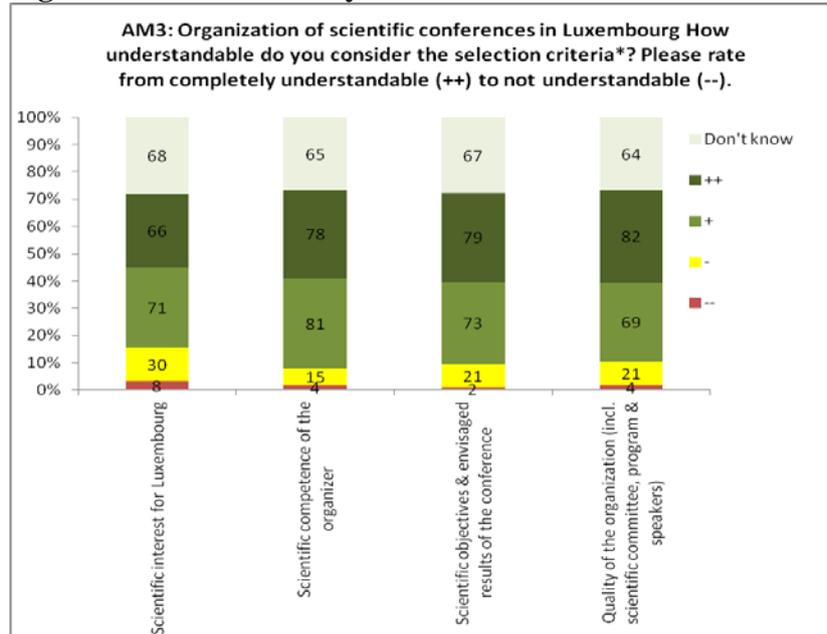
¹⁷ *s = small conference (20-50 participants), m = medium (51 – 100 participants), l = large (>100 participants)

Out of all conferences, only 5% had conference proceedings funded by AM4, a surprising result, which was explained to us in interviews and by FNR staff as being due to the low rate of publication of conference proceedings in general.

Understandability and quality of the selection criteria

The FNR uses 4 selection criteria to select the applications to AM3 that are worth funding. We wanted to know how understandable and qualified these criteria are to applicants.

Fig. 70 Understandability of selection criteria for AM3



In the questionnaire, most applicants considered the criteria to understandable. Eighteen respondents took the opportunity to freely comment on these criteria. Again, many respondents complained about the criterion ‘Scientific interest for Luxembourg’ and its vague meaning. We discussed all of the criteria and the comments about them with the FNR staff. As a result of these discussions, we suggest deleting the criterion ‘Scientific interest for Luxembourg’ as well as ‘Scientific competence of the organiser’ and to changing the criterion ‘Scientific objectives & envisaged results of the conference’ to ‘Relevance of the conference for the scientific field’. We also recommend changing ‘Quality of the organisation (incl. scientific committee, programme & speakers)’ to ‘Quality of the programme and the speakers’.

Conclusions and recommendations

Strengthen AM3 as a funding tool

AM3 is an AM with high potential to meet the FNR’s objectives and to improve the national as well as the international visibility of research in Luxembourg. We recommend strengthening this funding tool and encouraging more applications by increasing its flexibility. AM3 received the lowest satisfaction rates with the reporting time requirements, forms, and required information, the FNR should therefore consider a reduction of the amount and kind of documents required, e.g., by allowing meaningful descriptions of the qualifications of key speakers for conferences or lecture series (to date, CVs have to be provided to the FNR for all speakers). We also recommend the inclusion of interactive conference formats such as workshops, with high quality requirements, of course, in the scope of eligible activities.

Amount of funding

With 26% cost coverage AM3 is the AM measure with the lowest coverage rate of all AMs. Therefore it is of no surprise, that only 36.1% of AM3 beneficiaries considered the support they received for their activity to have been sufficient to cover all of the costs they needed funding for. Even though beneficiaries are aware of the co-funding nature of AM3 and know that the set-up of this funding tool is not supposed to cover all of the activity-specific costs, their degree of dissatisfaction was high, indicating a need for higher funding levels. This funding tool is one of the most prominent tools in the AM portfolio to fulfil the FNR's major objectives, such as national and international visibility of research in Luxembourg. We therefore recommend that the FNR should take a closer look at the eligible costs and the lump sums provided, in order to cover a higher proportion of the actual costs through the funding tool. This should also include an expansion of the scope of eligible costs to cover other costs that have been requested by interviewees and respondents to our AM2-4 survey, such as appropriate fees for external speakers, publication costs for conference proceedings, additional catering costs and complementary PR measures as well as salaries for personnel.

Selection criteria

We recommend deleting the criterion 'Scientific interest for Luxembourg' as well as 'Scientific competence of the organiser' and changing the criterion 'Scientific objectives & envisaged results of the conference' to 'Relevance of the conference for the scientific field'. We also recommend changing 'Quality of the organisation (incl. scientific committee, programme & speakers)' to 'Quality of the programme and the speakers'.

Eligibility criterion

As this is a co-funding model, we recommend leaving the option of raising funds from other sources up to the applicants without restrictions such as the need to implement registration fees.

We also suggest keeping the eligibility criterion 'Open to the general public' mandatory, depending on the type of conference.

Additional recommendations

We also suggest that the FNR should increase its efforts to involve actors from the private sector more actively in AM3 activities in order to support the development of a culture of patronage, which is still missing in Luxembourg. Such initiatives would also be in line with ongoing developments of the FNR to strengthen the ties between the academic and private sector.

6.3.6. AM4

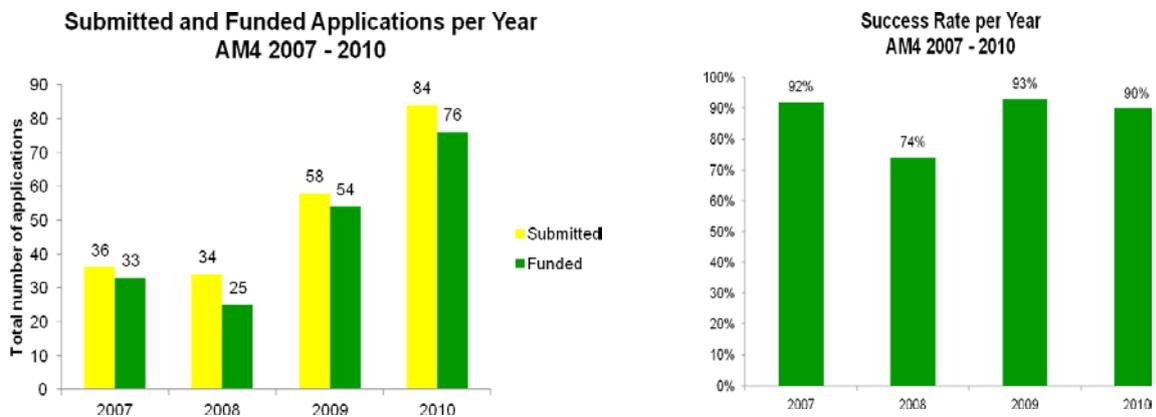
Applicants and beneficiaries of AM4

Between 2007 and 2010, 212 applications to AM4 were submitted to the FNR, including 20 applications of AFR beneficiaries (11 of them being PhD theses). Some 79.3% (135) of the applications were submitted by male applicants, and 29.7% (57) by female applicants. Applications submitted by each gender had similar success rates of 93% for male applicants and 91% for female applicants.

With an average success rate of 92%, AM4 has the highest success rate of all AMs. In the period 2007 to 2010, 3% (5 applications) of all applications were ineligible, 3% (5 applications) had been retracted by the applicant, 2% (4 applications) were rejected and 1% (1

application) was cancelled by the FNR. Such high success rates are indicative of low, if any, selection by the FNR.

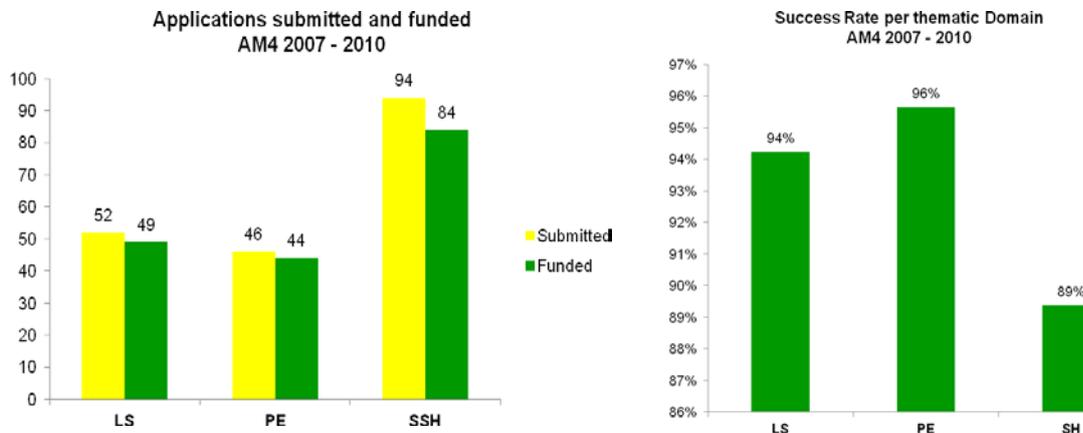
Fig. 71 Development of AM4 success rates 2007 - 2010



Development of AM4 by priority domain

The largest number of applications (49%) to AM4 were submitted by applicants doing research in the social sciences and humanities (SH), 27% in life sciences (LS) and 24% in mathematics, physical sciences, information and communication technology, engineering, universe and earth sciences (PE) with success rates of 94% for applications in LS, 96% in PE and 89% in SH.

Fig. 72 Development of AM4 by priority domain



Usage of AM4

Within AM4, the FNR distinguishes between 4 categories of publications: Conference proceedings (cp), peer-reviewed journal articles (journal), monographs (mono) and PhD theses (phd).

Of all publications (177) funded by the FNR in the period 2007 to 2010, 42% were PhD theses, 26% conference proceedings, 17% journal articles and 15% monographs (Tab 39).

Each type of these FNR-funded publications is represented in all 3 domains of the FNR (Fig. 73).

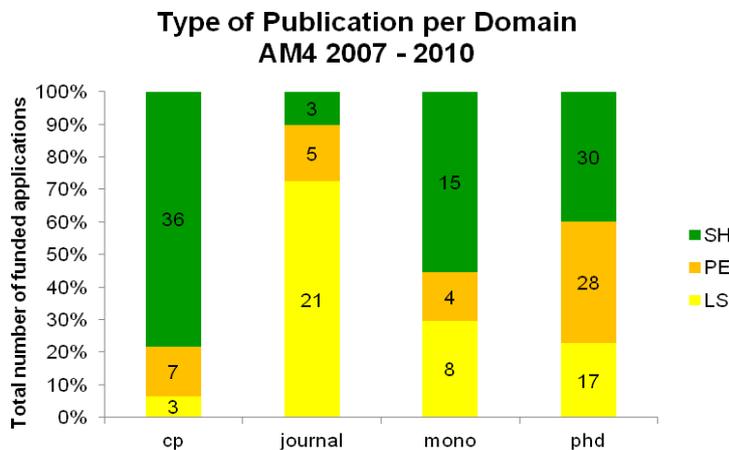
Tab. 39 Submitted and funded applications by type of publication

Type of publication*	Submitted	Funded	Success rate
cp	49	46	94%
journal	34	29	85%
mono	30	27	90%
phd	79	75	95%
Total	192	177	92%

* cp = conference proceedings, journal = peer-reviewed journal article, mono = monograph, phd = PhD thesis

Development of AM4 per priority domain

Fig. 73 Funded applications by type and priority domain



Among the priority domains of the FNR, there are differences in the distribution of different types of publication, indicating domain specificities. The most common type of publication funded by the FNR in SH is conference proceedings, followed by PhD theses and monographs. While publications in peer-reviewed journals play a minor role in SH, they are the predominant type of publication in LS, followed by PhD theses and monographs, where conference proceedings play a minor role. The highest proportion of FNR-funded publications in PE are PhD theses, followed by conference proceedings, articles in peer-reviewed journals and monographs last.

Median costs coverage in AM4, depending on the type of publication

Tab. 40 Median costs of publications funded in AM4

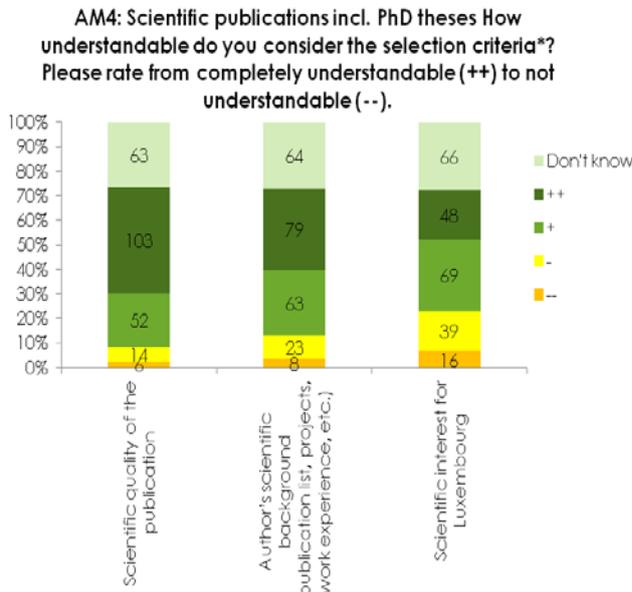
Type of publication	Median cost in €
cp	4,000.00
journal	1,509.88
mono	3,899.85 ¹⁸
phd	1,583.00

¹⁸ This number refers to the median amount paid by the FNR

Understandability and quality of the selection criteria

The FNR uses 3 selection criteria to select the applications that are worth funding. We wanted to know how understandable and qualified these criteria are to applicants.

Fig. 74 Understandability of AM4 selection criteria



In the questionnaire, most applicants considered the criterion ‘Scientific quality of the publication’ to be the most understandable criterion, followed by the ‘Author’s scientific background (publication list, projects, work experience, etc.)’ and ‘Scientific interest for Luxembourg’ as the least understandable criterion.

Eight respondents to our survey took the opportunity to freely comment on the criteria. They complained once again about the diffuse nature of the criterion ‘Scientific Interest for Luxembourg’ and the insecurity it creates. Some indicated that funding of PhD theses should not be the obligation of the FNR, as good PhDs would have been published in peer-reviewed journals, without incurring high costs. Some suggested deleting the criterion ‘Author’s scientific background’, as this may not be indicative of the quality of the research to be published. In parallel to addressing the issue of selection criteria, respondents also used the occasion to address the issue of eligible costs and requested the inclusion of translation costs, where applicable, for AM4.

Conclusions and recommendations

Amount of funding

In AM4, the FNR grants a lump sum of €4,000 upon approval of an application for AM4 (scientific publications incl. PhD theses) publications. There are 4 different categories of publication costs covered by AM4, that need to be considered separately: Costs for conference proceedings, articles in journals, PhD theses and monographs. Upon approval of an application, the FNR grants a lump sum of €4,000 (we determined median costs to be: Conference proceedings: €4,000, journals €1,510 and PhD theses €1,583, for monographs in average the FNR provided €3,900 to these costs, that vary tremendously in amount, exceeding the provided lump sum by far), which is sufficient to cover the average cost of PhD theses and journals.

We recommend distinguishing between costs for conference proceedings, articles in journals, PhD theses and monographs. Funding for articles in journals and PhD theses should be merged, based upon lump sum agreements, into the project context, conference proceedings and monographs however, should be treated separately.

As conference proceedings are, by nature, connected with a conference, the FNR should allocate funding of conference proceedings to the context of FNR-funded conferences (AM3). Monographs, if connected to a project, should be eligible costs for projects funded under Core or Inter, or within Attract or Pearl. However, as there are also monographs published by non-profit organisations, for example, it seems reasonable to keep AM4 focused on monographs as a funding tool within the FNR portfolio. Here minor supplementary costs should also be eligible.

The current uniform lump sum of €4,000 for these activities is at the cutting edge for monographs and conference proceedings. These lump sums should be reconsidered by the FNR. However, due to high cost variations in both categories, lump sum agreements are not suitable, except when integrated into co-funding models.

Selection procedure

To ensure the key objective is scientific quality, we recommend evaluation of applications by external reviewers from the scientific field which the monograph originates from. These should be obligatory for AM4 focused on monographs.

Selection criteria

For the selection criterion ‘Scientific interest for Luxembourg’: We agree with the argumentation of the applicants and suggest deleting this criterion as it is a weak criterion that has a wide range of interpretation, leading to more confusion rather than contributing to selection of the best applications.

We also recommend deleting the selection criterion ‘Author’s scientific background (publication list, projects, work experience, etc.)’ as this criterion does not necessarily reveal the quality of the research now being submitted for publication.

Change the selection criterion ‘Scientific quality of the publication’. We recommend replacing the term ‘scientific quality’ of the publication with ‘scientific relevance of the publication’, to better account for the wide range of conceivable constellations that can contribute to the value of a publication.

6.4. Identification of objectives and added values of the AMs

As determined in the FNR performance contract with the Government of Luxembourg for the years 2011 – 2013, no systemic analysis of the AMs had been conducted to provide a clearer picture of their objectives and added values to elaborate recommendations for possible improvements and to lay the groundwork for the elaboration of suitable indicators of their impact before this evaluation was carried out. This is also seen in the light of the impact study of the FNR that will be conducted by the Ministry for Higher Education and Research in 2014.

In the course of this evaluation, we first identified objectives and added values of the current AMs in the light of the FNR's key objectives as determined in the evaluation of the FNR conducted in 2010 by the ministry in interviews with the representatives of the public research organisations, in surveys with the applicants and beneficiaries and in numerous discussions with the FNR.

In our interviews, the interviewees were asked which objectives and added values they assign to individual AMs. They could choose from a list of 7 suggestions that reflected the mission of the FNR and complement the list with objectives and added values they considered important for a certain AM. In addition to this, we also asked applicants and beneficiaries in the surveys to identify added values and objectives of AMs. All of these suggestions were integrated into our original list of 7 added values and objectives, which was thus expanded to 17, including 10 more added values than we had originally anticipated.

By analysis of the responses, we gained a picture of the frequency with which the added values had been assigned to AMs and could identify major objectives and added values of the AMs. The following list summarises our results.

Major objectives and added values of the AMs identified

- Increase in national and international visibility;
- Increase in national or international network (strengthening existing collaboration, establishing new collaboration)
- Increase in the resources of my institution
- Increase in attractiveness of the research system
- Increase in the comprehensibility of research
- Increase in the interest in research
- Label of quality

Other objectives and added values of the AMs identified by the stakeholder

- Training of young scientists;
- Bring competence to Luxembourg;
- Building up competence;
- Increase in know-how (in Luxembourg);
- Guarantee of continuity (of an activity);
- Acceptance as a research institution;
- Elaboration of a project;
- Development of a basis for further projects;
- Increase of visibility of the FNR;
- Activation of multipliers.

6.5. Evaluation of the potential of AMs to fulfil key objectives and added values

Through our analyses we also gained a picture of which of the AMs had been assigned the highest number of added values and how frequently the added values were assigned to each measure, to identify AMs with high potential to fulfil key objectives and added values defined by the mission of the FNR.

In doing so, we identified AM1, AM2c and AM3 as the measures with the highest impact and potential to fulfil key objectives of the FNR as well as other objectives and added values identified by the stakeholders.

The following list summarises the results of our interviews. It should be seen as indicative of the potential of an AM to fulfil key objectives and added values. The number of assignments indicates the frequency an AM had been deemed to fulfil an objective or added value, the list itself indicates which objectives and values were assigned to a certain AM.

AMs with high impact and potential to fulfil identified objectives and added values.

AM3 organisation of scientific conferences in Luxembourg (37 assignments)

- Increase in national and international visibility;
- Increase in national or international network (strengthening existing collaboration, establishing new collaboration);
- Increase in the resources of my institution;
- Increase in attractiveness of the research system;
- Increase in the comprehensibility of research;
- Increase in the interest in research;
- Label of quality.

Other objectives:

- Training of young scientists;
- Acceptance as a research institution.

AM1 (34 assignments)

- Increase in national and international visibility;
- Increase in national or international network (strengthening existing collaboration, establishing new collaboration);
- Increase in the resources of my institution;
- Increase in attractiveness of the research system;
- Increase in the comprehensibility of research;
- Increase in the interest in research;
- Label of quality.

Other objectives:

- Activation of multipliers.

AM2c IN and OUT mobility are 1 measure with alternating directions of exchange. Nevertheless, we had them analysed individually by the stakeholder for their inherent specific features.

AM2c IN mobility (31 assignments)

- Increase in national and international visibility;

- Increase in national or international network (strengthening existing collaboration, establishing new collaboration);
- Increase in the resources of my institution;
- Label of quality.

Other objectives:

- Training of young scientists;
- Bring competence to Luxembourg;
- Building up competence;
- Increase in know-how (in Luxembourg);
- Elaboration of a project;
- Development of a basis for further projects;
- Increase in know-how (in Luxembourg).

AM2c OUT mobility (24 assignments)

- Increase in national and international visibility;
- Increase in national or international network (strengthening existing collaboration, establishing new collaboration);
- Increase in attractiveness of the research system;
- Increase in the resources of my institution;
- Label of quality.

Other objectives:

- Bringing competence to Luxembourg;
- Increase in know-how (in Luxembourg).

Although the AM2c OUT measure was clearly evaluated by the stakeholders as having less potential to fulfil the objectives of this AM, we kept them together in one category. The interviewees emphasised that they evaluated both directions of exchange similarly in their potential to fulfil the FNR's objectives and that their somewhat lower validation of AM2c OUT mobility would reflect the as-is situation and the much lower number of applications for AM2c OUT than for AM2c IN mobility in the past.

AMs with less impact and potential to fulfil identified objectives and added values.

AM2a (24 assignments)

- Increase in national and international visibility;
- Increase in national or international network (strengthening existing collaboration, establishing new collaboration);
- Increase in the resources of my institution;
- Label of quality.

Other objectives:

- Increase in visibility of the FNR;
- Increase in know-how (in Luxembourg).

AM4 Scientific publications incl. PhD theses (17 assignments)

- Increase in national and international visibility;
- Increase in national or international network (strengthening existing collaboration, establishing new collaboration);
- Increase in the resources of my institution;
- Label of quality.

Other objectives:

- Training of young scientists.

AM2b Training of researchers abroad (14 assignments)

- Increase in national and international visibility;
- Increase in national or international network (strengthening existing collaboration, establishing new collaboration);
- Increase in the resources of my institution;
- Increase in the understandability of research.

Further objectives

- Bringing competence to Luxembourg;
- Increase in know-how (in Luxembourg).

AM2b Organisation of trainings in Luxembourg (11 assignments)

- Increase in national and international visibility;
- Increase in national or international network (strengthening existing collaboration, establishing new collaboration);
- Increase in the understandability of research;
- Increase in the resources of my institution;
- Label of quality.

6.6. Identification of indicators to measure the impact of the AMs

With the introduction of the performance contract as a management and communication tool with the ministry, the FNR introduced indicators to define, monitor and evaluate the FNRs general objectives.

However, as part of a development process, the FNR realised that some of the indicators were inadequately defined (either difficult to measure, not pertinent, or not fully reflecting the objective) and should be adapted or changed for the next performance contract. For example, to date, the FNR uses the increase in the number of AM2c applications as a direct indicator of the impact of AM2c, but it is also aware of the potential problems faced in general with quantitative indicators based on absolute numbers. Indeed, quantitative indicators turn out to be less indicative of the impact of an AM measure, with one exception, this being AM2a, participation in conferences abroad. Here, the number of applications reflects a pre-selection based on quality and added value of the participation for the research community, as, before submitting the application, the candidate already has to have been accepted by the scientific committee of the conference, as a precondition for application.

In this evaluation we based the identification of indicators to assess the impact of AMs on their identified objectives and added values, with a focus on adequate reflection of the FNR's mission.

In the interviews we also asked the interviewees to suggest indicators to measure the impact of each AM and discussed the quality of these potential indicators with them. A summary of the results of further in-depth discussions of these suggestions with FNR staff and FNR officials is shown in Tab 40. We suggest at least one indicator to measure the impact of each AM, for most AMs we suggest more than one. If we suggest multiple indicators, we recommend that they should be used complementarily. Some of them need to be introduced or reintroduced, for instance the evaluation of events by the participants and questionnaires, while others are already being conducted, such as long-term studies in secondary schools into the number of graduates to indent of to study a field of science. In the light of the FNR's mission they will provide a sound basis for the development of suitable criteria in the impact study of the FNR that will be conducted by the Ministry for Higher Education and Research in 2014.

Tab. 41 Identified indicators for the impact of AMs

AM	Impact indicators
AM1 (Promotion of scientific culture)	<p>Evaluation of the activity by participants.</p> <p>Survey: What do you know about research? Did you participate in an AM event? Measure the awareness of science and the attitude towards science.</p> <p>Long-term studies in secondary schools: Correlation of activities with the intention of graduates to study a field of science. The survey should include questions about their knowledge about science, research and the research institutions in Luxembourg</p>
AM2a (Active participation in conferences abroad)	<p>Number of applications. (Indicator of the number of scientists who have been accepted by the conference committee, as applicants already have to have been accepted by the conference committee when they apply to the FNR)</p>
AM2b (Training of Researchers abroad)	<p>Questionnaire for supervisors/PIs, how satisfied they are, how good was the training in their opinion.</p> <p>Evaluation by participants at the end of training courses.</p>
AM2b(Organisation of training courses in Luxembourg) Summer schools	<p>Evaluation by participants at the end of training courses.</p> <p>Questionnaire for supervisors, how satisfied they are, how good was the training in their opinion.</p>
AM2c (IN mobility) of researchers	<p>Number and career stage of visiting scientists.</p> <p>Questionnaire for the host, whether the stay has served its purpose.</p>
AM2c (OUT mobility) of researchers	<p>Number and career stage of outgoing scientists.</p> <p>Survey/questionnaire of beneficiaries about their degree of satisfaction. Should also address a reflection about cultural experiences.</p>
AM3 (Organisation of scientific conferences in Luxembourg)	<p>List of all participants (should also include data about the position/career stage of the participants to show their qualification - could also be included in a questionnaire for participants).</p> <p>Evaluation of the conference by the participants.</p> <p>Should evaluate the conference qualitatively not quantitatively.</p> <p>Quality of invited speakers.</p> <p>Composition and quality of scientific committee.</p>
AM4 (Scientific publications incl. PhD theses)	<p>Dependent on type of publication.</p> <p>Peer-reviewed articles in journals: Impact factor</p> <p>Conference proceedings and monographs: Evaluation by external reviewers.</p> <p>PhD theses: Grade of the thesis</p>

7. ANNEXES

7.1. List of Acronyms and Abbreviations

National Institutions & FNR Beneficiaries

Ministère de l'Enseignement supérieur et de la Recherche (Ministry of higher education and research)

CRP Public Research Centre

CRPGL Centre de Recherche Public Gabriel Lippmann

CRPHT Centre de Recherche Public Henri Tudor

CRPS Centre de Recherche Public Santé

CEPS/Instead Centre d'Etudes de Populations, de Pauvreté et de Politiques Socio-Economiques, / International Network for Studies in Technology, Environment, Alternatives, Development

UL University of Luxembourg

PRO Public Research Organisations (3 Public Research Centres, CEPS/Instead and University of Luxembourg)

MNHN Musée National d'histoire naturelle

Public Institutions with a research mission (3 Public Research Centres, CEPS/Instead, University of Luxembourg and MNHN)

CU CRP Henri Tudor, CRP Gabriel Lippmann, CRP Santé, CEPS/INSTEAD

International Funding Organisations

FWO Fonds Wetenschappelijk Onderzoek, Flanders

DFG Deutsche Forschungsgemeinschaft, Germany

FNRS Fonds National de la Recherche Scientifique, Belgium

RCN The national Research Council of Norway, Norway

Academics

CRP Henri Tudor

CRP Gabriel Lippmann

CRP Santé

CEPS/INSTEAD

University of Luxembourg

Musée National d'histoire naturelle(MNHN)

Humboldt University, Berlin

Musée National d'histoire et d'art (MNHA)

University of Trier

ETH Zürich

Université Libre de Bruxelles

Université Louis Pasteur, Strasbourg

University of Sheffield

Ruprecht Karls Universität Heidelberg

Non-academic institutions in Luxembourg without a research mission

Ministère de l'Environnement

Laboratoire de Biologie Moléculaire et Cellulaire de Cancer (LBMCC)

Institut Grand-Ducal

Comité luxembourgeois pour l'année polaire internationale

Athenée de Luxembourg

Centre d'études européens Robert Schumann

Schools

Ecole Privée Fieldgen
Lycée Classique Diekirch

asbl associations, non-profit organisations

Association des Jeunes Scientifiques Luxembourg (AJSL)
Association Luxembourgeoise des Ingénieurs, Architectes et Industriels
European Center for Geodynamics and Seismology (ECGS)
Association des Biologistes Luxembourgeois (ABIOL)
European Space Agency asbl (ESA)
PROSUD asbl
Luxembourg Association of Physicists (APHYL)
Les Electrons libres asbl
Iwerliewen fir bedreete Volleker asbl
Luxembourg Association for Chemists (ACHIL)
Kulturfabrik
Association Soutien aux Travailleurs Immigrés (ASTI)
Elterevereinigung Gemeng Biwer asbl
Association des Professeurs d'Education Physique asbl
Indig'eau Networking

ex terr. Luxembourg citizen working outside Luxembourg

SME Small and medium sized enterprises

LS Life Sciences

PE Mathematics, Physical Sciences, Information and Communication, Engineering, Universe and Earth Sciences

SH Social Sciences and Humanities

AM - Accompanying Measures

AFR - PhD and Postdoc grants (Aides à la Formation-Recherche Luxembourg's Grant Scheme for PhDs and Postdocs)

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