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Evaluation of the selection process for the first call for proposals

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Preface

This report was commissioned by the Austrian Science Fund's (FWF) and presents the results of an accompanying evaluation of the selection process for the first call of FWF's Cluster of Excellence (CoE) programme. The purpose is to provide information for developing the procedures for the next call for proposals.

The report is written by Liv Langfeldt (project leader), Siri Brorstad Borlaug, Silje Marie Svartefoss and Espen Solberg. Kody Steffy contributed to the development of the project and the survey questionnaires.

We are grateful to all the participants in the CoE application and selection process who contributed with input to the evaluation through interviews and survey replies: applicants, expert reviewers, members of the international jury, representatives of the research organisations, FWF Board members, and policy stakeholders, and to the FWF administration who provided data and documentation.

Oslo, April 2023

Vibeke Opheim
Director

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Executive summary

In 2021, the Austrian Science Fund (FWF) launched its Clusters of Excellence (CoE) programme as the first stage in the excellent=austria initiative. The plan was to fund about four clusters – consisting of three to eight collaborating organisa-tions each – selected based on a 2-stage international peer review process. The clusters' annual budgets can be €2 to 7 million, of which the FWF funds 60% and the research institutions hosting the clusters the remaining 40%. FWF provides funding for five years, with the possibility of an additional five years.

This report presents the results of an accompanying evaluation of the selection procedures for the first call for Clusters of Excellence, and recommendations for developing the procedures for the second call. It is based on analyses of application and review data, surveys to applicants and expert reviewers, interviews with host institutions, members of the international jury assessing the proposals, the FWF board and other stakeholders, as well as observation of jury meetings.

Key findings

The overall conclusions of the evaluation are positive. Review and selection procedures have generally been adequate and efficient, and stakeholders' satisfaction at expected level or above. The FWF call for Clusters of Excellence attracted well-qualified teams and proposals and appeared attractive especially to the natural sciences and multi-disciplinary fields. A majority of both applicants and reviewers find programme policies appropriate for creating synergies between research environments and for establishing long-term leading research fields. Main challenges and concerns identified relate to the timing of the call and timely and clear guidelines and requirements, transparency of the review and selection process, ensuring consistent use of review criteria, and defining the proper role for the FWF Board.

Call outreach and proposal preparation

Wide outreach at pre-proposal stage. The FWF's first Clusters of Excellence call attracted pre-proposals from 35 well-qualified consortia formed with new and

existing research collaborations. No stakeholders were concerned about limited outreach of the call, few proposals, or that the number of proposals per university/research organisation was restricted. On the contrary, some stakeholders saw the moderate number of proposals as a positive sign of concentration around strong and promising consortia. There were some imbalances in geographical and institutional distribution of pre-proposals, with half of the consortia partners from the State of Vienna and some institutions participating in a large part of the pre-proposals. The 11 full proposals represented 10 different lead institutions. Considering that Austrian research institutions are unevenly geographically distributed, institutional and geographical diversity was greater than could be expected. There was a low proportion of female directors in applied clusters. Still, pre-proposals with female directors were more often invited to the full proposal stage, and the proportion of female members of the boards of directors was relatively high.

Much multi-disciplinarity, but disciplinary imbalances. The outreach of the call appears better in the natural sciences than in other domains of science. Dominance of the natural sciences, and scarce representation of the technical sciences and social sciences is also seen in analysis of the FWF's Special Research Programme (SFB), which indicates that the CoE programme may enhance existing disciplinary strengths and structures in Austrian research. Still, many proposals combined multiple domains of science, and all domains of science are represented in both pre-proposals and full proposals.

Pre-selection at the host institutions varied. The number of Letters of Intent a university/research organisation could submit was limited. Hence, they had to coordinate their efforts. All interviewed institutions had a bottom-up process, inviting staff to voice their interest in taking the lead. Some employed a formal selection process, while smaller institutions often had a more dialogue-based approach. Selection was also based on dialogue in the system on other planned pre-proposals and consortia. The application work demanded considerable resources at the host organisations, and in particular the guidelines on co-funding caused frustration.

The pre-proposal review and selection process

General satisfaction with review criteria. Both applicants and reviewers expressed satisfaction with the review criteria, and they appeared in agreement on what should be the most important review criteria. The criteria's relative importance and weighting, though, did not seem clear to applicants, and there were some concerns about how criteria were applied by the reviewers, e.g. inconsistency between the reviews.

Varied satisfaction with reviewer competence. Overall, applicants were satisfied with the reviews. On this aspect the FWF CoE programme comes out with relatively high satisfaction when compared to other programmes. Our analysis did not find evident selection biases at the pre-proposal stage. Among those passing to the full proposal stage we find high satisfaction with reviewer competence, while those not passing were moderately satisfied, and we cannot say to what extent dissatisfaction results from inadequate reviewer expertise and from rejection respectively. There is a concern that for some proposals it was hard to find matching reviewer competence, and in the survey a few reviewers reported limited expertise match to the pre-proposal they had been assigned.

Shortlist: Smooth jury process, frustration in the FWF Board, and some misperceptions at host organisations. The international jury's evaluation of pre-proposals to be recommended for full proposals, was a relatively smooth process in which each proposal was first discussed and rated in a sub-group of the jury, then those found to be the best were discussed in plenary – where rates were adjusted and a shortlist of 11 clusters concluded. While the jury appeared well satisfied with the review organisation and procedures, the FWF Board meeting set to approve the shortlist caused frustration. Due to conflicts of interest in the FWF Board, who was present in the meeting, and the information on the proposals and assessments communicated to the Board was limited. This caused unclarities in the FWF Board's responsibilities regarding the shortlist decision. Moreover, in the interviews some host organisation representatives expressed that the shortlist had released considerable discontent among applicants. This seems to be based on a misperception that the shortlist included policy considerations due to the rather neat geographical distribution of the full proposals.

The full proposal review and selection process

Jury conclusion in line with external reviews. The jury's conclusions appear straightforward and well justified. It was based on the quality of the research and the research teams and complied with the expert assessments. The secondary criteria – training, communication and management – did not come into play when the jury concluded the list of proposals recommended for funding. Yet, we observed general challenges in organising fair review of proposals across different areas of research. Notably, none of the broadly multidisciplinary proposals were among the five proposals with the best overall average grades from the expert reviewers, and none of them were funded.

Mixed applicant experiences. The applicants' perceptions of the hearings – in which they met the jury and defended their proposal – were mixed. On the one side, the hearings were said to be good and the jury professional, on the other that the jury's

questions were irrelevant and the jury lacked required expertise. There was some arbitrariness in focus for the hearings: for some proposals the research was discussed by multiple jury members in the hearings, for other proposals mainly other aspects than the research were discussed. One plea from applicants was for hearings to be more focused on the proposed research.

Suboptimal transparency. Generally, the selection procedures and criteria were well defined, and the jury members were very satisfied with the information and facilitation from the FWF. We still see some suboptimal information acquisition among jury members, and the FWF could more explicitly have communicated key conditions for the full proposal round to the jury before the hearings. Moreover, there was information asymmetry between jury members who had served on the pre-proposal jury and those new to the full proposal jury.

Programme policy and implementation

Satisfaction with requirements and programme policies. The surveys indicate that both applicants and reviewers see the CoE programme to be adequate for achieving its aims. A majority see programme policies as appropriate for creating synergies between research environments and for establishing long-term leading research fields. Regarding programme terms, the applicants are particularly satisfied with the amount of funding and impact on prestige and career of awarded researchers.

General satisfaction with programme implementation, management and costs. Overall, stakeholders appear satisfied with programme management and costs. There were some concerns with late information to applicants, i.e. late clarification on programme terms for this first CoE call. Moreover, there were major concerns regarding timelines for proposals that implied that important work needed to be done during vacations, and with requirements for co-funding and in-kind contributions. On the positive side, applicants were comparatively well satisfied with the support from the FWF during the application process, and individual reviewer time was about the same as for other funding schemes.

Comparatively good on transparency and impartiality. When comparing with results from surveys on other funding schemes, the FWF CoE comes out with relatively high satisfaction regarding transparency of the selection process. Overall, applicants appear satisfied with the clarity of terms and requirements and the transparency of the selection process. Still, we see that some of the applicants call for earlier information on the review criteria and process, clearer feedback on the pre-proposals and more transparency of decisions on pre-proposals. Moreover, one third of applicants report that their general confidence in the selection process

is lower than for other funding sources. The FWF CoE scheme still comes out better than the Swiss NCCR scheme on applicants' views on the impartially of the assessments of their proposals.

Recommendations

For the next Cluster of Excellence call the FWF is recommended to:

- Continue to restrict the number of proposals per institution and by this limit the number of unsuccessful proposals. Consider to further restrict the number of full proposals, and possibly simplify full proposals requirements.
- Proposal requirements, review criteria and the selection process for all stages should be clear in advance and published along with call for Letters of Intent. Provide clear and simple rules for co-funding and in-kind funding and clarify requirements for 'Description of the additional COE units' in pre-proposals.
- The timeline for calls and deadlines should ensure that proposals can be prepared outside of vacation seasons.
- Clarify if interdisciplinary clusters are among the programme's aims. If interdisciplinary clusters are to be promoted, interdisciplinarity should be included in the review criteria, and the selection process should be adapted to reduce the disadvantages interdisciplinarity research often meet when competing against disciplinary research.
- To avoid misperceptions about the review and selection process, more transparency about procedures, roles and competencies is needed. The criteria applied by the jury and the limited role of the FWF Board need to be better communicated to stakeholders. Consider allowing rebuttals from applicants on pre-proposal and/or full proposal reviews.
- Involve the FWF more in the guidance of expert reviewers. Proposals with potentially scant reviewer expertise should be identified and given special attention.
- Continue to divide the pre-proposal jury into subpanels, while also ensuring reading and discussion across the subpanels. Consider organising broader reading and assessment within the subpanels and reducing the time for plenary discussion and assessments of pre-proposals.
- Define the proper role for the FWF Board in approving the shortlist of pre-proposals to be invited to the submit full proposals.
- Ensure more accountability and transparency in the full proposal jury's assessments by demanding more structured assessments and hearings and reducing information asymmetry.

The recommendations are further explained in Chapter 5.2.

1 Introduction

1.1 The CoE scheme: background and challenges

Policy background

Austria has a well-developed science system, with strong traditions and a remarkable growth in R&D spending over the last two decades. At the same time, a number of challenges and weaknesses have been identified. The comprehensive OECD review of innovation policy from 2018 recommended i.a. a general move 'from inputs to outcomes and impact' (OECD, 2018). Promoting research excellence and increasing competitive funding of basic research was among the key recommendations in this review. As a follow up, the government's 'RTI Strategy 2030' has put forward a number of action points related to excellent research (Austrian Federal Government, 2020):

- 'Launch an excellence initiative to strengthen leading-edge research and collaborations extending beyond the boundaries of disciplines, institutions and countries
- Develop and expand future-oriented fields of research and encourage freedom of scope in research
- Accelerate the progress with profile building and priority setting, and strengthen knowledge valorisation
- Establish three research clusters of world-ranking status including an ongoing process of definition for such clusters
- Strengthen the universities as key institutions of basic research and expand the Institute of Technology Austria (IST Austria), and the Austrian Academy of Sciences (OeAW)
- Increase the share of competitive research funding'.

In 2021, the Austrian Science Fund (FWF) launched the Clusters of Excellence programme as part of following up these ambitions for excellence in research. This report presents the results of an accompanying evaluation of the selection process for the first call for FWF Clusters of Excellence (CoE). Below we first describe the CoE programme, its selection process, and the objectives, and data and methods of the accompanying evaluation.

The Clusters of Excellence (CoE) Programme

The Clusters of Excellence programme is the first stage of the FWF's excellent=austria initiative; the next stages are 'Emerging fields' and 'Austria Chairs of Excellence'. The CoE programme will award up to €70 million for outstanding research teams to carry out large-scale, cutting-edge projects in basic research. The aim is to establish long-term internationally leading research fields in Austria.

While the planned Clusters of Excellence will include more collaborating organisations and have higher budgets than many excellence schemes in other countries (OECD 2014), objectives of the FWF Clusters of Excellence are similar to these, including to provide outstanding, internationally visible research, knowledge and technology transfer from basic research, training of young researchers and promotion of gender equality in science. The Austrian scheme also includes co-funding and midterm evaluation: Each cluster will have an annual budget between €2 and 7 million, of which the FWF funds 60%, while the remaining 40% must be provided by the lead and collaborating research institutions. Funding is provided for a five-year period, with the possibility of an additional five-year-period after an interim evaluation.

The CoE selection process

As the selected Clusters are expected to make substantial impacts on the development of their research fields and have a visible presence in the Austrian research system, competent, fair, and effective selection procedures are crucial.

The selection process in short: The FWF Cluster of Excellence selection process began with a call for letters of intent in summer 2021, to which 37 research teams/consortia responded. This was followed by a call for pre-proposals with deadline December 2021, to which 35 pre-proposals were submitted. Each pre-proposal was first reviewed by four experts independently. Then the pre-proposals were reviewed jointly by an international jury that proposed a shortlist of eleven projects, which were invited to submit full proposals. Deadline for full proposals was October 2022. The full proposals was, as the pre-proposals, first reviewed independently by experts, then jointly by a jury. The CoE teams (BOD members) and representatives of the participating research institutions was subsequently invited to a hearing with the jury. In March 2023, the FWF decided on five CoEs to be funded based on the jury's recommendation. Details and concerns at each stage of the process are listed below.

Letters of Intent (LoI)

- *Eligibility criteria:* Each consortium needs to consist of one Lead institution and minimum two, maximum seven, Collaborating institutions. All Austrian research institutions can act as lead or collaborating institution, but there is a set

limit of the number of proposals an institution could submit as lead institution. This limit varies by amount of FWF funding the last years (University of Vienna could submit 6, others 1 to 3). Moreover, the lead institution needs to have experience with competitive research grants involving multiple research institutions and at least one of the institutions needs the right to award doctoral degrees. For each collaborating institution there must be a member for the board of directors (BOD) of the CoE holding adequate academic qualifications (minimum standards for researcher qualifications as for FWF's Stand-Alone Projects). BOD members may only be part of one CoE proposal.

- *Eligibility check:* The LoIs were checked for eligibility by the FWF, and 36 found eligible.
- *Match-and-Merge Process:* One reason for starting with letters of intent, was to enable merging of consortia into larger clusters. Information of the submitted LoIs was published on the FWF website to facilitate this. No LoIs were merged.

Pre-proposals

- *Review criteria:* Proposals were reviewed on three main criteria with a set of sub-criteria as listed below. Grades on FWF's five-point scale[1] were given on each main criterion.
  - *1) Assessment of the research proposal.* a) The quality of the research programme, in particular in an international context. b) The programme's potential for innovation. c) The coherence of and added value generated by the proposed research programme. d) The programme's potential for generating significant synergies between the researchers involved. To what extent and how suitably have the applicants addressed: e) gender- and sex-related components of the research question and the approaches chosen. f) the research programme's ethics-related components.
  - *2) Assessment of the team of researchers.* a) The composition of the team and how suitable it is for meeting the research programme's goals. b) The composition of the team with respect to gender and diversity (such as the range of career stages represented in the team). c) Quality of the individual researchers' previous work and their potential for making a significant contribution to the proposed research.
  - *3) Assessment of the research environment.* a) The quality and appropriateness of the research environment available to the CoE. b) Anticipated synergies between the institutions involved.

[1] Excellent, Very Good, Good, Average, Poor. The scale and the general principles of the review procedures are described in 'General Principles of the FWF Decision-Making Procedure' https://www.fwf.ac.at/fileadmin/files/Dokumente/Entscheidung_Evaluation/fwf-decision-making-procedure.pdf

- *Independent expert reviews organised outside of the FWF:* Due to capacity and concerns for conflicts of interest within the FWF, the FWF chose to outsource the work with finding and recruiting expert reviewers and collecting the reviews – four experts per proposals. This task was performed by ESF-Science Connect.
- *Conflicts of interest in the FWF Board:* Due to widespread conflicts of interest, the FWF Board's information about individual reviews and involvement in the selection process was limited. In total, 25 FWF Board members participated in pre-proposals as member of the board of directors (BOD) or as a Key Researcher in the planned clusters. Six of the FWF Board's 'Reporters' and six of their 'Alternates' applied as BOD-members and eight Reporters and five 'Alternates' as Key Researcher (the FWF Board consists of 32 Reporters, 32 Alternates, plus a five-member Executive Board).
- *International jury and approval by the FWF Board:* The jury consisted of 16 scholars from around the world, made up of three subpanels: biology and medical sciences (5 members); natural science and engineering (5 members); social sciences and humanities (5 members) and a chair. The proposals were first reviewed in subpanels meetings, then jointly in plenary/with the full jury. Meetings were digital. The jury recommended 11 pre-proposals to be invited to submit full proposals. Subsequently, the recommendation was approved by the FWF Board.

Full proposals

- *Review criteria:* At the full proposal stage, criteria for the Training, Communication Management units of the clusters are added. In addition to the criteria employed for the pre-proposals the following are assessed:
  - Training unit: Quality of the concepts in the area of training, promotion of young academics, including tenure-track model(s).
  - Communication and Transfer unit: Quality of the concept for science communication both within and beyond the scientific community, public outreach. If applicable, quality of the concept for the transfer of research results to the economy and/or society.
  - Management unit: Governance and management structures of the cluster to ensure internal coherence and efficiency If applicable, composition and structure of optional units.
- *Independent expert reviews:* Similar as for pre-proposals independent expert reviews were organised by ESF-Science Connect. Some of those who had reviewed the proposals were reinvited to assess the full version of the proposal they had reviewed at the pre-proposal.
- *International jury:* The full proposal jury consisted of 11 members and a chair (Table 3.1). All were from outside Austria and six of them were also part of the

pre-proposal jury. The international jury based its assessments on written reviews from independent experts and hearings with the proposed CoE teams and was in charge of proposing the Clusters of Excellence to be funded.

Formal decision by the FWF

- The FWF Board takes the formal funding decisions. Due to conflicts of interest, the Board was not involved in the CoE review process and its information about individual proposals and reviews limited.

1.2 Objectives of the evaluation

The purpose of this report is to gain insight on the working of the selection procedures of the CoE scheme, and to provide FWF with recommendations on how the selection process could be improved before launching the 2nd call for proposals in 2023.

Key concerns of the evaluation are competent, effective, legitimate, transparent and impartial selection procedures. Previous studies have shown that grant selection processes are prone to different types of challenges. One is that peer review may disfavour e.g. interdisciplinary and non-conventional research (Lamont 2009; Langfeldt 2006; Chubin & Hackett 1990; Cicchetti 1991; Cole et al. 1981; Roy 1985), it may also be challenging due to tensions between academic autonomy and accountability to society, and between peer expertise and impartiality (Langfeldt & Kyvik 2011), and the outcome of review may depend on how the review is organised (Langfeldt 2004; Langfeldt 2001). Furthermore, the priorities and decisions at the research institutions may affect how applicants experience the selection process (Langfeldt & Borlaug 2016).

1.3 Data sources and methods of the evaluation

Analysis of background material

Data and background material from the FWF were analysed:

- *Application data/*analyses of applicant profiles and outreach of the call: Data on the letters of intent's and pre-proposals' research fields and consortia, and applicants'/BOD members' institution and gender, the assessments and results.
- *Review documents*: Reviewer guidelines, review reports/evaluation documents on the pre-proposals.
- *Experts and jury members:* Overview members of juries, and reports on how experts and jury members were selected.

Data on centre/cluster of excellence selection processes in other countries. We also applied information from previous studies and evaluations, and available documentation on other CoE schemes and selection processes, including evaluations of the Norwegian CoE scheme and the Swiss NCCR scheme (Borlaug et al. 2019; Langfeldt et al. 2021; Langfeldt & Borlaug 2016; Langfeldt et al. 2010).

Survey to applicants

A survey to the applicants informs a core part of the evaluation, covering the wide variety of themes addressed: how the consortium was formed, support from their home institution, their experiences and views of the Cluster of Excellence application and selection process (requirements and procedures, review criteria and competencies; timeline and efficiency of the process). See questionnaire in Appendix 3.

The survey included all applicants to the CoE call, directed both to the lead applicant/coordinator of the proposed CoE and the other members of the board of directors/representatives of the collaborating research institutions, in total 242 persons. We received 121 replies, which gives a response rate of 50.4% of those for whom we had correct email addresses. We obtained at least one reply for each of the proposals, and a higher proportion of the lead applicants than the other members of the board of directors, replied. See response analysis in Appendix 5. The lead applicant is represented in the survey for 27 of the 35 pre-proposals.

Reviewer survey

To get the views of the reviewers we sent a short survey to the experts who reviewed the pre-proposals. The survey contained questions on adequacy and comprehensibility of guidelines and criteria, and timeline for the selection process/review time compared to other schemes, as well as their overall opinion of the review process and possible improvements. We also asked the reviewers to compare with their experiences from other selection processes. See questionnaire in Appendix 4.

Survey invitations were sent to 131 reviewers for whom NIFU obtained valid email addresses. Of these 63 (48.1 %) responded. See response analysis in Appendix 5.

Interviews with stakeholders and observation of jury meetings

In interviews with the various stakeholder groups, we explored their experiences and views on the CoE application and selection process and asked for elaboration of findings from the analysis of background material and when relevant the

applicant and reviewer surveys. In total 25 persons were interviewed (list in Appendix 2). The following groups of stakeholders were interviewed:

- *FWF Board members:* Individual interviews with relevant members of the FWF Board/Executive Board covering all key topics of the evaluation.
- *The pre- and full-proposal evaluation juries:* In-depth interviews with selected jury members, including members of both the pre-proposal and full proposal juries. Key topics were adequacy and comprehensibility of guidelines and criteria, proposal quality, the panel composition and timeline for the selection process, as well as their overall opinion of the review process and possible improvements. Moreover, parts of the jury meetings were observed to get first-hand information on the organising of the discussions and the kind of concerns emphasised in the assessments.
- *CoE applicants:* Individual interviews with selected full proposal applicants to learn about their experiences with the last part of the proposal and selection process (which is not covered by the applicant survey). Due to lack of response to our interview invitations to this group, only two applicants were interviewed. We also received some written feedback from full proposal applicants.
- *The lead and collaborating research organisations:* Interviews with representatives/leadership of selected institutions. Key topics were attractiveness, outreach and transparency of the CoE call, the research organisations' strategies and experiences concerning the preselection and how the CoE may impact their priorities, and their general trust in the selection process.
- *Policy stakeholders:* Interviews with representatives of The Federal Ministry for Education, Science and Research (BMBWF). Key topics were their general impression of the aim and appropriateness of the CoE scheme and its selection procedures, as well as satisfaction with the timeline and programme implementation and management. These were group interviews.

Limitations

This evaluation combines multiple data sources. It includes perspectives from a broad set of stakeholders and response rates are good. There are still limitations. Most importantly, it is an in-process evaluation in which most data are collected before the CoE selection process concluded. On the one hand, this means that we include the views and perceptions of the stakeholders based on their very recent memories and experiences. On the other hand, it means that the evaluation of the final stage of the selection process is more limited. It also means that results are not fully comparable to results from previous evaluations of other excellence funding instruments. In those evaluations, data were collected after the conclusion of the selection processes and stakeholders' memories were more distant and formed by the full process. We have the impression that some stakeholders to the

FWF CoE selection process were a bit hesitant to give their opinions on a process that had not yet concluded.

Another limitation, on a more detailed level, is that we lack data connecting reviewer selection and reviewers' survey replies to the proposals and reviews. This implies that we cannot analyse the extent to which applicant satisfaction correlate with reviewer expertise or difficulty in finding reviewers. We still have data connecting applicant survey replies to reviews and can so analyse how applicant satisfaction correlate with review outcome.

2 Outreach of the CoE call: LoIs and proposals

In this chapter we address whether the terms and requirements of the call encouraged the submission of high-quality proposals in line with the aims of the Cluster of Excellence call. The chapter does *not* address the final stage of the selection process, still a few tables contain figures on the final CoEs selected (tables 2.2, 2.4, 2.5 and 2.7). These figures are commented in Chapter 3.3, not in Chapter 2.

2.1 Characteristics and quality of the proposals

The main indicator of the outreach of the CoE call is the submitted letters of intent and proposals. The FWF received 37 LoIs, and subsequently 35 pre-proposals of which 11 were invited to submit a full proposal. In other words, nearly all consortia submitting a LoI also submitted a pre-proposal. Below we first explore characteristics of the proposals by field of research and geographical distribution, and institution and age of applicants. We then look at reviewer grades and invitation to the full proposal stage, by field of research/interdisciplinarity and gender.

We comment primarily on the characteristics of pre-proposals and full proposals. We include separate figures for LoI in some tables, but due to small numbers we do not comment on the differences between the LoI and pre-proposals.

Proposal and applicant characteristics

Main domain of proposals. A large part of the proposals came from the natural sciences (54% of pre-proposals with natural sciences as the main domain). Technical sciences were the smallest main domain with only 6% of pre-proposals, while humanities accounted for 11%, and social sciences and medical sciences 14% each. Among those invited for full proposals, the natural sciences were even more dominant (64%). None of those registered with social science as the main domain made it to a full proposal (Table 2.1). When categorising into three overall fields, Life Science, STEM and SSH, the distribution is more equal with 14 STEM pre-proposals, 11 life sciences and 10 SSH. Also, success rates are more equal, with 36% of life and STEM, and 20% SSH, invited for full proposals (Table 2.1).

Table 2.1 Cluster of Excellence proposals by main domains of science*and overall field, 2022, percentages

Domain of science	LoIs	Pre-pro-posals	Invited Full proposals
Humanities	10.8 %	11.4 %	18.2%
Medicine	16.2 %	14.3 %	9.1%
Natural Sciences	51.4 %	54.3 %	63.6%
Social Sciences	13.5 %	14.3 %	0.0%
Technical Sciences	8.1 %	5.7 %	9.1%
N	**37**	**35**	**11**
Research field	**Pre-pro-posals**	**Invited Full proposals**	**% Invited Full proposals**
BioMed	11	4	36%
NaTec	14	5	36%
SSH	10	2	20%
Total	**35**	**11**	**31%**

**Main domain as defined for the LoIs, data from FWF.*

Proposals across domains of science. A substantial part of the proposals were multidisciplinary. Seventeen of the pre-proposals included research fields within one domain of science (as natural sciences, technical sciences, humanities etc.), while 18 included more than one of these categories. Nine pre-proposals combined SSH with STEM or the life sciences. Moreover, 12 pre-proposals were, due to their breadth, assigned to jury members from different subpanels (Table 2.2). Of those invited to submit full proposals, five were within one domain (two humanities and three natural sciences), while six combined two or three domains (Table 2.2). Success rates for multidisciplinary proposals are discussed below (text to Table 2.10).

Table 2.2 Cluster of Excellence pre-proposals by domain of science / combinations of domains, 2022. Counts.

Domains in the proposal	Pre-proposals	Invited Full pro-posals	Funded
H – Humanities	2	2	2
M – Medicine	2		
N – Natural Sciences	10	3	1
SS – Social Sciences	2		
T – Technical Sciences	1		
H N	1		
H SS	1		
N M	4	2	1
N SS	4	1	
N T	4	2	1
M SS T	1		
N SS M	2		
N T SS	1	1	
Assigned jury members from **multiple** subpanels	12	4	
All assigned jury members in **same** subpanel	23	7	5
Total	**35**	**11**	**5**

Source: Data from the FWF.

Large consortia, differing by fields. While as much as 43% of the pre-proposals had maximum allowed number of consortia members, none had the minimum number (three) of required collaborating organisations. Proposals with SSH as the main domain more often included 'smaller' consortia (40% had 5 BOD members), while those in the life sciences often included larger consortia (91% had 7 or 8 BOD members, Table 2.3). In other words, there are clear domain differences in consortia size. Still, in all domains we find a span in consortia size from 5 to 8 members.

Table 2.3 Cluster of Excellence pre-proposals by domain of science and consortium size, 2022, percentages

Number of BOD members*	Life sciences	STEM	SSH	Total
4** to 5	9.1 %	14.3 %	40.0 %	20.0 %
6	0.0 %	21.4 %	0.0 %	8.6 %
7	45.5 %	14.3 %	30.0 %	28.6 %
8	45.5 %	50.0 %	30.0 %	42.9 %
N	**11**	**14**	**10**	**35**

Source: Data from the FWF.

**Board of directors for the proposed cluster, including the director. Life sciences include medical and biological sciences. STEM includes science (apart from life sciences), technology, engineering and mathematics. **Only one pre-proposal had 4 members.*

Maximum number of Letters of Intent submitted. A large part of the research institutions submitted the maximum number of LoIs they were allowed as lead institution. With three exceptions[2], all institutions allowed to submit more than one LoI as lead institution, submitted the maximum number allowed (Table 2.4). The 11 invitations for full proposals were distributed on 10 different lead institutions. All these submitted a full proposal. Overall, the restrictions on numbers of Letters of Intent per institution appear to have reduced the number of proposals, and so helped balance the proposal and review work needed for selecting the expected four Clusters of Excellence.

[2] Exceptions: MU Graz and ISTA did not lead any LoI, they were allowed to lead two each. Vetmed submitted one, was allowed to submit two.

Table 2.4 Cluster of Excellence proposals by lead institution, 2022, percentages

Lead Institution	Allowed LoIs*	Submitted LoIs	Submitted Pre-proposals	Invited Full proposals	Funded
Uni Wien	6	6	6	1	1
MedUni Wien	3	3	3	1	
TU Wien	3	3	3	1	1
Uni Graz	3	3	3	2	
Uni Innsbruck	3	3	3	1	1
ÖAW	3	3	3	1	1
Boku	2	2	2	1	
MedUni Innsbruck	2	2	1		
TU Graz	2	2	2		
Uni Linz	2	2	2	1	
Uni Salzburg	2	2	2		
CEU	1	1	1	1	1
IIASA	1	1	1		
Uni Klagenfurt	1	1	1	1	
Uni Leoben	1	1	0		
VetMed	2	1	1		
WU Wien	1	1	1		
N	**38**	**37**	**35**	**11**	**5**

Source: Data from the FWF.

**Institutions that were allowed to submit, but did not do so, are not included. All figures by lead institution defined in LoI.*

Geographical dominance. Half of the participations, in terms of collaborating and lead institutions in the pre-proposals and the invited full proposals, were from the state of Vienna. Styria accounted for 16% of the participations in pre-proposals and 18% in invited full proposals, while the rest of the states had 10% or less. The two smallest Austrian states, Vorarlberg and Burgenland, had no participating institutions (Table 2.5). Analysing by the share of proposals in which the states had a BOD member, rather than their share of the BOD members, we get different figures. Vienna participated in all 11 full proposals, Steiermark in 7, Niederösterreich in 6, Tirol in 5, while the rest participated in 2 or 3 full proposals each.

Table 2.5 Participations/BOD members in Cluster of Excellence proposals, 2022, by state, percentages

State / Land	LoIs*	Pre-proposals	Full proposals	Funded
Wien	47 %	50.4 %	50.0 %	60.0%
Steiermark	20 %	15.7 %	17.9 %	5.7%
Tirol	10 %	9.9 %	9.0 %	14.3%
Oberösterreich	8 %	5.8 %	5.1 %	5.7%
Niederösterreich	7 %	7.9 %	10.3 %	11.4%
Salzburg	6 %	8.3 %	3.8 %	2.9%
Kärnten	2 %	2.1 %	3.8 %	0.0%
N	**189**	**242**	**78**	**35**

Source: Data from the FWF.

**Source for the pre-proposals and full proposals: registered affiliation of the CoE's board of directors. Source for the LoI figures: Aggregated list from the FWF.*

Central participants with multiple participations. Some research institutions participated in a large part of the proposals. The University of Vienna took part in 26 of the 35 pre-proposals, and 6 more institutions participated in 10 or more pre-proposals. Among these we find Institute of Science and Technology Austria (ISTA) that took part in 11 pre-proposals but did not submit any LoI as lead institution (allowed to submit 2). The University of Vienna, Technical University of Vienna and ISTA also participated in most full proposals, with 8, 7 and 5 respectively (Table 2.6).

Table 2.6 Number of proposals the institutions* participated in.

Research institution	LoIs	Pre-proposals	Invited Full proposals
Uni Wien	27	26	8
TU Wien	12	13	7
Uni Graz	14	12	4
ISTA	11	11	5
ÖAW	13	11	3
Meduni Wien	11	10	2
Uni Innsbruck	11	10	4
Uni Linz	9	9	3
Uni Salzburg	10	9	2
TU Graz	9	9	3
Meduni Graz	7	6	2
Universität für Bodenkultur Wien BOKU	4	5	2
Central European University (CEU)	5	5	2
International Institute for Applied Systems Analysis IASA	5	4	1
Meduni Innsbruck	5	4	1
Uni Klagenfurt	4	4	2
Vetmed Wien	4	4	0
WU Wien	5	4	1
Uni Leoben	4	3	0
IMP	2	2	0
ZAMG	2	2	1
Others**	15	12	2

Source: Data from the FWF.

**For the pre-proposals: registered affiliation of the CoE's board of directors. Source for the LoI figures: Aggregated list from FWF 'participating institutions'.*

***Participation in one pre-proposal each: AIT, BFW, CeMM, Competence Center CHASE, Competence Center Wood K plus, Joanneum Research, Karl Landsteiner University of Health Sciences, Kunstuni Linz, NHM Wien, PMU Salzburg, VRVis, WIFO. (In addition: Know Center GmbH registered at one pre-proposal along with a BOD member affiliated to TU Graz.)*

Male directors of research and BOD members. There is a clear dominance of men among the directors of research for the proposed Clusters of Excellence (16% women in the LoI, reduced to 11% in the pre-proposals). Also among the BOD members the majority are men (32% women in the LoI, increased to 37% in the pre-proposals and the invited full proposals, Table 2.7). However, pre-proposals with a female director had a higher success rate (50% of women directors 29% of men directors invited for full proposals Table 2.7). Pre-proposals with a moderate

proportion (26-49%) of female BOD-members had a higher success rate than those with lower or higher proportions of women (Table 2.10).

Table 2.7 Gender of CoE directors and BOD members, Cluster of Excellence proposals 2022, by phase of selection process, counts and percentages.

Phase	Role in project	# Women	# Men	% Women
LoI	Director of Research	6	31	16 %
LoI	BOD member	68	142	32 %
Pre-proposal	Director of Research	4	31	11 %
Pre-proposal	BOD member	76	131	37 %
Full proposal	Director of Research	2	9	18%
Full proposal	BOD member	25	42	37%
Funded	Director of Research	1	4	20%
Funded	BOD member	15	20	43%

Source: Data from the FWF.

Reviewer grades and invitations to next stage

Mostly top grades. Most of the submitted pre-proposals were assessed to be excellent or very good: all got average grades above 'good' and all obtained at least one excellent grade from one of the reviewers. There was somewhat more diversity in grades given STEM proposals than SSH proposals, i.e. the outer ends of the scales were more used (Table 2.8).

Table 2.8 Cluster of Excellence pre-proposals 2022, grades* by overall field and criteria, percentages and means (from 4 expert reviews per proposal).

Grade 'Overall Assessment'	BioMed	NaTec	SSH	Total
1 (Excellent)	0.0 %	14.3 %	0.0 %	5.7 %
1.25	18.2 %	7.1 %	20.0 %	14.3 %
1.5	27.3 %	14.3 %	30.0 %	22.9 %
1.75	18.2 %	21.4 %	10.0 %	17.1 %
2 (Very good)	18.2 %	14.3 %	20.0 %	17.1 %
2.25	0.0 %	14.3 %	10.0 %	8.6 %
2.5	0.0 %	7.1 %	10.0 %	5.7 %
2.75	18.2 %	7.1 %	0.0 %	8.6 %
N pre-proposals	**11**	**14**	**10**	**35**
Average grades / Criterion				
Average Grade 'Overall Assessment'	1.82	1.80	1.75	1.79
Average Grade 'Research programme'	1.84	1.91	1.80	1.86
Average Grade 'Team of researchers'	1.43	1.55	1.48	1.49
Average Grade 'Research environment'	1.57	1.57	1.38	1.51
Average of all grades	1.66	1.71	1.60	1.66

Source: Data from the FWF.

** The proposals were rated on a scale from Excellent (1) to Poor (5) by four reviewers individually. The upper part of the table shows the number of pre-proposals which obtained an average of 1, 1.25 etc. from the external reviewers. The lower part of the table shows the average grades for all proposals by field and criteria.*

Concurrence in reviewer scores. For a large part of the proposals, the individual reviewer scores did not differ much. Especially for the grades on the team and the environment there is little variance in scores, with around 70% with full concurrence or one or two reviewers differing one grade (which give a variance below 0.5 in table below). There is more variance in the grades on research programme and the overall grades, with 46% below 0.5, 27% variance from 0.5 to 1.5, and 23% above 1.5 (table below). Notably, the proportion with low variance is higher among those invited for full proposals, and none of those with overall grade variance above 1 made it to full proposal. In other words, it was hard to make it to the full proposals stage without high reviewer agreement on top grades.

Table 2.9 Cluster of Excellence pre-proposals 2022, variance in grades by criteria, percentages.

	Grade Overall		Grade Research		Grade Team		Grade Environment	
Variance Grades	Total	Shortlist	Total	Shortlist	Total	Shortlist	Total	Shortlist
< 0.5	45.7 %	72.7 %	45.7 %	81.8 %	74.3 %	100.0 %	68.6 %	100.0 %
0.5-1.5	31.4 %	27.3 %	31.4 %	18.2 %	17.1 %	0.0 %	25.7 %	0.0 %
> 1.5	22.9 %	0.0 %	22.9 %	0.0 %	8.6 %	0.0 %	5.7 %	0.0 %
N	35	11	35	11	35	11	35	11

Source: Data from the FWF.

**Variance calculated from four score per proposal, given by the four individual expert reviews on each of the review criteria.*

No apparent bias against multidisciplinary pre-proposals. Table 2.10 shows average grades by number of research domains in the pre-proposals, and proportion invited for full proposals. The consortia invited for full proposals cover both clusters within one domain (as natural sciences or humanities), and clusters combining two or three domains. Pre-proposals combining two domains of science had a higher success rate than those within one domain. We also see that it was not a disadvantage to be assigned jury member from different subpanels: in fact, those assigned jury member from different subpanels made it slightly better than those only discussed in one of the three subpanels (33% vs. 30% made it to a full proposal, Table 2.10, lower part). Still, we see that those who combined three domains, or both SSH and Sciences or Life Sciences, less often made it to full proposal than those within one domain only. The former also received fewer top scores (Table 2.10, upper part). Hence, there appear to be limits to the kinds of multidisciplinary that paid off in the review process.

Table 2.10 Cluster of Excellence pre-proposals 2022, grades* by criteria and combination of main research domains in proposal, means (from 4 expert reviews per proposal).

Number of domains of science** in proposal	Average Grade Research	Average Grade Team	Average Grade Environment	Average Grade Overall	Average Grade All criteria	N	% Invited full proposal
One	1.82	1.50	1.57	1.72	1.65	17	29%
Two	1.80	1.46	1.36	1.77	1.60	14	36%
Three	2.19	1.56	1.81	2.19	1.94	4	25%
Both SSH and Sciences/ Life sciences	2.06	1.58	1.50	2.00	1.78	9	22%
Assigned jury members from **multiple** subpanels							
Yes	1.90	1.63	1.58	1.88	1.90	12	33%
No	1.84	1.42	1.48	1.75	1.84	23	30%
Total	**1.86**	**1.49**	**1.51**	**1.79**	**1.66**	**35**	**31%**

Source: Data from the FWF.

**The proposals were rated on a scale from Excellent (1) to Poor (5) by four reviewers individually.*

*** The domains and combinations are listed in Table 2.2.*

Most success for pre-proposals with a moderate proportion of women in the board of directors. Pre-proposals with 26% to 49% women on the board of directors more often made it to a full proposal, whereas those with fewer or more women, were less often invited to submit a full proposal (Table 2.11). The difference in success rates between these groups cannot be directly explained by the review grades,[3] and numbers are small. Hence, it is hard to analyse patterns in success rates.

Table 2.11 Cluster of Excellence pre-proposals 2022, grades* by proportion of females in the board of directors (BOD) and criteria, means (from 4 expert reviews per proposal).

% Female BOD members	Average Grade Research	Average Grade Team	Average Grade Environment	Average Grade Overall	Average Grade All criteria	N	% Invited full proposal
0–25%	1.75	1.50	1.55	1.68	1.62	11	27%
26–49%	1.94	1.42	1.47	1.84	1.67	16	36%
50% or above	1.84	1.63	1.56	1.84	1.72	8	25%
Total	**1.86**	**1.49**	**1.51**	**1.79**	**1.66**	**35**	**31%**

Source: Data from the FWF.

** The proposals were rated on a scale from Excellent (1) to Poor (5) by four reviewers individually.*

[3] Pre-proposals with a moderate proportion (26% to 49%) of female BOD members scored on average better on team and environment, while those with low or high proportions of female BOD members on average scored better on the research programme (Table 2.11).

2.2 Roles of the host organisations

In this section we look at the role of lead and collaborating research institutions in terms of support to applicants, forming consortia, encouraging and pre-selecting CoE LoI and proposals, i.e. their role in shaping the pool of submitted applications.

Top leadership involved in proposal decisions. In most cases, the top leadership at the applicants' institutions were involved in deciding whether or not a CoE proposals was to be developed and submitted to the FWF (67% of applicants replied that the top leadership at their institution was involved, and 61% that the top leadership at collaborating institutions was involved). About one quarter replied that the school/faculty leadership was involved in the decisions, and fewer that department/similar level leadership was involved (18%, figure below, and Table Q2 in Appendix 6).

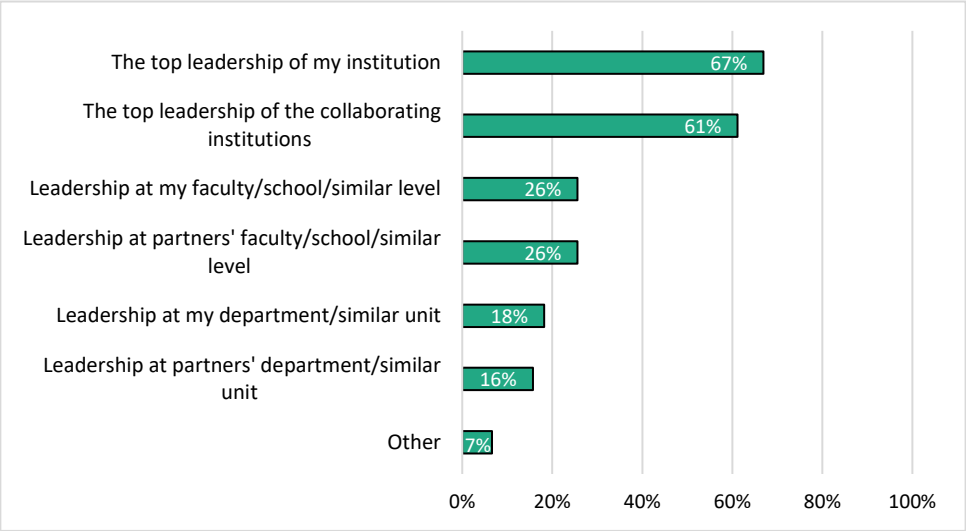

Figure 2.1 Who was involved in deciding whether to develop and submit proposals?

Source: NIFU CoE applicant survey N=121.

The universities/research organisations had different forms of pre-selection of proposals. In the applicant survey about half of the researchers (52%) replied that there were informal preselection processes, 19% that there were formal preselection processes and 17% that there was no preselection at their home institution (figure below, and Table Q3 in Appendix 6). The remaining selected the 'Other' category and commented that they did not know, it was a top-down or intransparent process – i.e. what could be said to be informal pre-selection – or it was a mix/different processes for proposals with lead or partner institution roles. In the latter case, there was formal or informal preselection for lead proposals, and no preselection for other proposals. Interviews with leaders of the host organisations echo the survey findings. Concerning the selection process, all institutions allowed

for all researchers to express their interest in the call, but the organisation of the internal selection process varied. The larger institutions employed varying formal selection criteria like amount of third-party funding, recent hires, new or planned infrastructures, scientific impact, consortium composition and whether the applications fitted with the institution's priority areas. Some had also through previous internal processes already identified and invested in certain research groups or focus areas, and these seemed to be kind of natural candidates for an application. Decisive criteria for selecting applicants seemed, however, to be recent hires and infrastructures as these could be included in the in-kind funding. At most of the interviewed institutions, both large and small, the internal selection process was solved through meetings and discussions between the top leadership and the potential applicants. In this process it became clear which research groups had the potential to make it in an international evaluation, according to the informants, and therefore it turned out in most cases to be a natural selection of proposals. In cases where this did not happen, decisions were made either by the top leadership or they were based on a comparison with other potentially competing proposals from other institutions, where the strengths and weaknesses were compared. At the interviewed institutions, all researchers involved in a proposal as a partner were allowed to apply. Such participation was seen as strengthening the research at the institution.

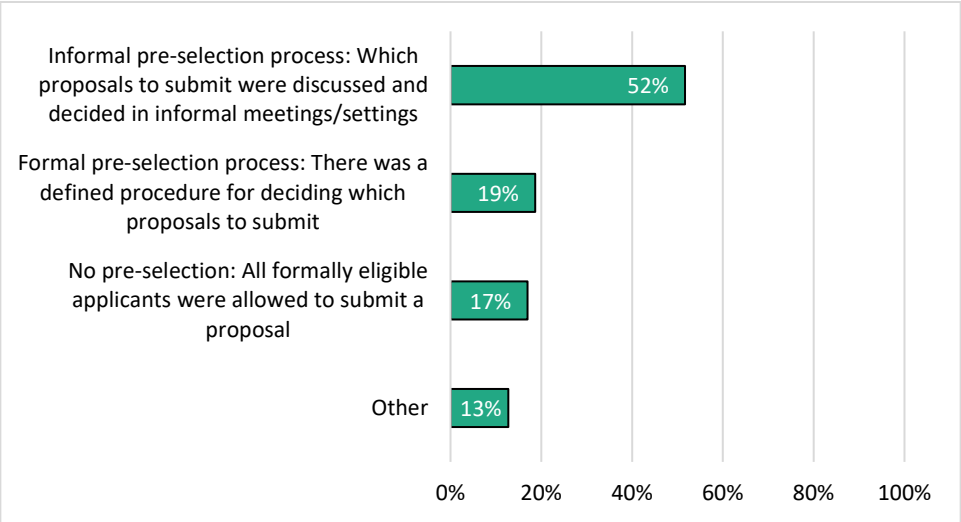

Figure 2.2 How would you describe the pre-selection at your home institution?

Source: NIFU CoE applicant survey N=118.

Support from the home institutions varied. The applicants received different types of support from their home institution. Most common were administrative support (56%) and dedicated funding/time to develop proposals (37%), while fewer applicants indicated that there had been internal proposal review (15%), or help in forming the consortium (11%), and 16% used the 'other' category for this

question (Figure 2.3 below, and Table Q4 in Appendix 6). A large part of those who used the 'other' category, commented that they had got no (specific) support from their organisation, while a few added that their organisation had promised matching funds/co-funding according to the requirements, two mentioned they had been provided advice from the research office or in workshops and spreadsheets, and one had been encouraged to apply for external seed money. Notably, a larger part of the directors of research than the other members BOD of the proposed clusters reported that they had received support from their home institution in form of dedicated funding/time to develop proposals and internal proposal review,[4] further corroborating that lead institutions were more involved in selecting and supporting proposals than were the collaborating institution. Some examples of local selection and support, as experienced by the applicants, are given in the textbox. Overall, close to half the applicants appeared satisfied with the support from their home organisation (44% used the upper part of the 5-point scale), about one quarter was unsatisfied (26% used the lower part of the 5-point scale), while the rest indicated the mid-value or 'cannot say' (Table Q6d in Appendix 6). Directors of research were more satisfied than the other BOD members (3.9 vs. 3.0 on the scale from 1 to 5). From the interviews with the leadership at the institutions, we see that at one institution the PIs were relieved of other obligations so they could focus on working on the proposal. Some institutions had dedicated staff, other interviewees said they would have dedicated staff in the next round. One of the institutions did not have resources to support the development of a proposal, and in this case funding from a foundation was decisive to hire a postdoc who helped the PI to put the application together.

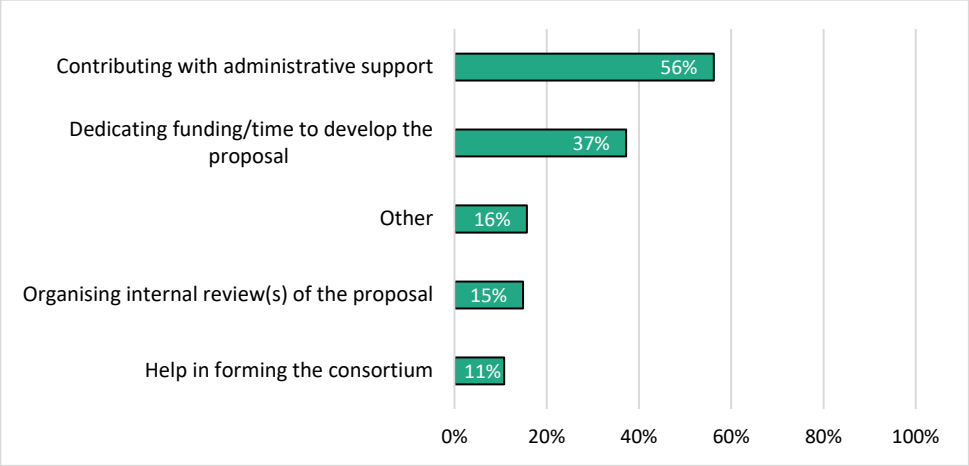

Figure 2.3 My home institution supported my consortium's proposals by...

Source: NIFU CoE applicant survey N=121.

[4] 56% of Directors and 32% of BOD members reported dedicated funding/time to develop proposals and 22% of Directors and 13% of BOD members reported internal proposal review.

Examples of local selection and support for the Cluster of excellence proposals (applicant survey replies)

The rectorate asked for formal applications via a brief abstract and overview on the planned programme and cluster. The proposals were chosen on the basis of these applications by the rectorate. We had some strategic talks with the vicerector for research to develop the application and with the team of the vicerector for research and some funding for native speakers' copy editing of the English proposal. (Lead/Director of Research)

Selection was done by the rectorate. We proposed pro-actively our Cluster to the rectorate and had two meetings with the vice-rector for research to explain the composition and content of our planned cluster and pre-proposal. we were also asked to present a 15 min pitch to the Scientific Advisory Board of the University […]. The Research Services and Career Development unit and the University […] helped us regarding formalities in preparing the Letter of Intent and the pre-proposal. (Lead/Director of Research)

My own institution vetted preliminary descriptions of proposals that involved my institution as lead institution and decided on that basis which proposals could go ahead. We were not selected. Then my colleagues and I were able to go ahead as partner institution within a similarly constituted consortium. (BOD member)

there wasn't any specific support initially – finally, there was an agreement on university financial support in the amount necessary given our share in the project. This took a while and was left unresolved for some time. (BOD member)

The consortia included new collaborations outside the home institution. The basis for the consortia were often new (87% of applicants replied this) and previous (65%) research collaboration among the consortium members, and more seldom new (30% replied this) and previous (33%) collaboration among researchers at the respondent's institutions (figure below, Table Q1 in Appendix 6). The Directors, more often than the BOD members, reported that the consortium was based on previous research collaboration among researchers at their institution (44% vs 30%), indicating that by being positioned as a lead institution it was easier to include such collaborations in the consortium. All applications needed to involve collaboration between Austrian institutions and the interviewed institutional leaders thought this was positive for the Austrian research system. Nevertheless, only one of the interviewees underlined that working with the proposals had an impact on research collaboration and networks beyond the work with the proposal which may result in other grant applications, and in particular in the SSH.

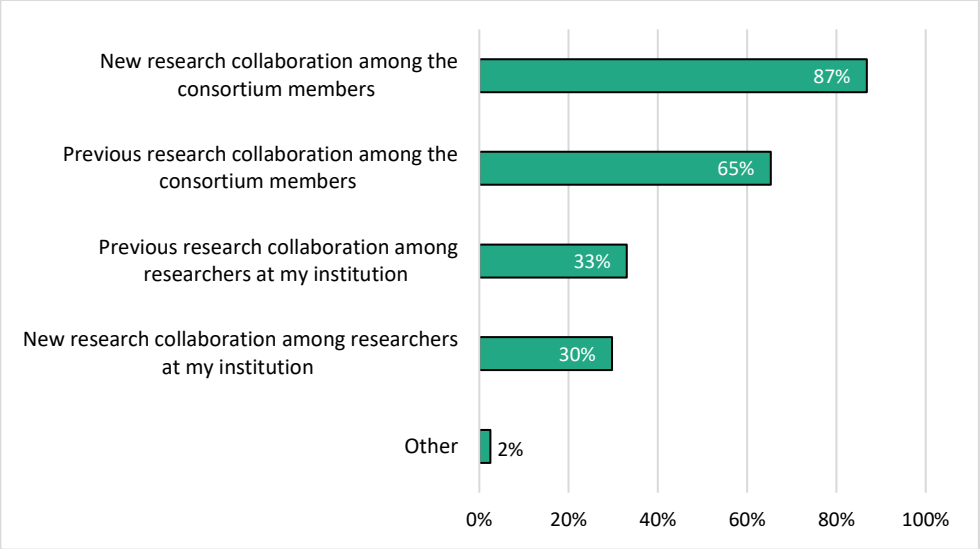

Figure 2.4 What was the basis for the consortium you formed for the Cluster of Excellence proposal

Source: NIFU CoE applicant survey N=121.

Some hesitance on leading role and required resources. Although interviewed representatives of the host organisations were enthusiastic about the CoE initiative, some were a bit more hesitant towards leading a proposal. There were several reasons for this. One informant claimed that as it was a new scheme, the road was made along the way. It gave the sense of being a guinea pig and as such it would be better to get some experiences first before leading a cluster, much because leading involves considerable resources – both time and financial. Another reason was the different conditions of the actors in the Austrian research system, herein public and private universities, and research institutes. These different conditions contribute to challenges in budgeting issues, and for some these challenges represent so much additional work that it reduced the attractiveness of being the lead institution. Most institutions contributed with administrative support and the informants underlines that the application process put a lot of pressure and demanded a lot of resources from the administration. The interviewees underlined that the application involved a lot of administrative work, especially regarding the budgeting issue and in-kind contributions. The rules and guidelines were perceived as unclear and 'being made along the way'. There were several unclarities regarding budgetary issues. They also emphasised that 40% co-funding was way too much: 'you will get commitment with 20% co-funding too', one vice-rector said.

2.3 Conclusions

Wide outreach and high-level proposals

Our data indicate that the FWF's first Clusters of Excellence call attracted well-qualified teams and proposals. The large majority of pre-proposals obtained very good grades. All obtained at least one 'excellent' grade from one of the four reviewers on one of the review criteria, and all overall grades were above 'good' and 60% above 'very good'. No stakeholders were concerned about limited outreach of the call, few proposals, or that the number of Letters of Intent per university/research organisation was restricted. On the contrary, some held 35 pre-proposals to be too much when only four clusters are expected to be funded. Most of the institutions submitted the maximum number of proposals they were allowed to, and applied for large consortia. There were some imbalances in geographical and institutional distribution of proposals, with half of the members of the board of directors from the State of Vienna and some institutions participating in a large part of the pre-proposals. Still, considering that Austrian research institutions are unevenly geographically distributed, Vienna generally accounts for 60% of FWF grants (FWF Annual Report 2021) and that the 11 full proposals represent 10 different lead institutions, geographical and institutional diversity is greater than might be expected.

Much multi-disciplinarity, but disciplinary imbalances

The outreach of the call appears better in the natural sciences than in other domains of science. A large part of the pre-proposals (54%) and full proposals (64%) are registered with natural sciences as the main domain, and in total 27 of the 35 pre-proposals and 9 of the 11 full proposals included natural sciences. Dominance of the natural sciences, and scarce representation of the technical sciences and social sciences has also been seen in analysis of the SFBs (Dinges et al. 2020, p. 28). Hence, the disciplinary imbalances appear 'as expected' and indicate that the CoE scheme is likely to fortify disciplinary strengths and structures in Austrian research, rather than to provide funding for underprivileged domains. Still, many proposals combined multiple domains of science, and all domains of science are represented in both pre-proposals and full proposals. Furthermore, we saw no apparent selection biases against multidisciplinary pre-proposals. Pre-proposals combining two domains of science had a slightly higher success rate than those within one domain, as did pre-proposals that due to their breadth were assigned reviewers from multiple subpanels.

Low share of female directors in proposals

Whereas there was a low proportion of female directors in applied clusters (11% in pre-proposals and 18% in full proposals), the proportion of female members of the boards of directors was relatively high (37% in both pre-proposals and full proposals).[5] Also considering that in the first proposal stage of the SFB scheme female coordinators have had lower success rates than men (Dinges et al. 2020, p. 60), while CoE pre-proposals with a female director had higher success rates than those with a male director, the CoEs selection process points towards more gender diversity.

Varied pre-selection and support at host institutions

While the consortia were based on the networks of the lead institutions, they also involved new collaborations. The pre-proposal process has as such contributed to feeding new relations. The involvement and support from the host institutions varied. All interviewed institutions had a bottom-up process, inviting all staff to voice their interest in taking the lead. Larger institutions allowed to submit more pre-proposals, employed a formal selection process, while smaller institutions had a more dialogue-based approach. Given the demand international excellence and 40% co-funding, it was – according to the informants – rather evident at the smaller institutions which research groups that could have the potential to make it in an international evaluation. Selection was also based on dialogue in the system on other planned pre-proposals and consortia. The support for developing the proposals varied between the institutions. Some relieved the PI of all other tasks, while others dedicated an administrative resource to aid in the process. The application work demanded a lot of resources, and in particular the guidelines on co-funding were perceived as too concrete with low flexibility. Given the different conditions of the host institutions, the co-funding contributed to considerable extra work and frustration.

[5] For comparison, funded FSBs have 20% female sub-project leaders (Dinges et al. 2020:58).

3 Reviewer competence and adequacy of review organisation and procedures

In this chapter we address the competencies, criteria and procedures of the Cluster of Excellence selection with an emphasis on stakeholders' views and satisfaction.

3.1 Reviewer competence

Recruitment and composition of reviewer pool and jury

Efforts needed to find expert reviewers varied much. ESF-Science Connect organised the expert review of the proposals and assigned 4 individual expert reviewers per pre-proposal, in total recruiting 140 experts (no expert was assigned more than one of the 35 pre-proposals). 446 invitations were sent out to get the planned 140 individual experts, i.e. 306 (69%) invitations did not result in a review. The number of invitations needed to get 4 reviews varied greatly between the proposals, with a minimum of 6 and maximum of 41 invitations per pre-proposal. For 51% of the pre-proposal 10 or fewer invitations were sent. For the remaining 49%, 11 to 41 invitations were sent. We lack data on which pre-proposals was demanding and so cannot say if they made it to the full proposal stage, that is, if having a proposal in fields where it was difficult to find available and competent reviewers was a disadvantage. Overall, the efforts needed to recruit experts, in terms of average invitations needed per completed review, was not higher than for the NCCR scheme in Switzerland.[6] In sum, difficulties in finding adequate reviewer expertise do not appear as a specific concern for the FWF CoE scheme. Then again, possibly negative results for the pre-proposals for which it was particularly difficult to find adequate reviewer expertise are not accounted for.[7]

[6] For the FWF CoE preproposals 3.2 invitations were need per review, similar figures for the 5th call for NCCR preproposals was 4.5 invitations per review, the 4th NCCR call 4 2.9 invitation per review.
[7] For the full proposals, the efforts needed to recruit the experts varied similarly. 146 experts were invited to collect 44 reviews (4 for each full proposal), i.e. 70% of invitations did not result in a review. The maximum per full proposal was 32 invitations. For each full proposal one or two of the reviewers were the same as for the preproposal, while the rest of the reviewers were new. Which ones to reinvite was decided based on the ESF's assessments of the preproposal reviews: the most thorough and evidenced reviewers were reinvited.

Extensive work to check conflicts of interest. The large cluster proposals demanded extensive checks of conflicts of interest, including checks of publication lists and affiliations of applicant teams and reviewer candidates in advance of review invitations, as well as asking reviewers to declare any potential conflicts of interest in the online review form. The guidelines excluded any person affiliated with an Austrian institution, anyone who had co-published or worked at the same institution as an applicant/BOD-member in the last 5 years, or who in other ways could be perceived to profit financially, professionally or personally from the success or failure of a proposal.[8] We do not have details on the conflict of interest checks, but expect that difficulties in finding reviewers without potential conflict of interest varied much between proposals, and were greatest for large clusters in small/specialised research topics with close collaboration across countries.

Experienced members of the pre-proposal reviewer pool. Of the 140 recruited reviewers, 66% were men, 34% women, and 1% unspecified. They were located in 28 different countries, dominated by western Europe and USA, Canada and Australia.[9] All reviewers who replied to the survey had previously reviewed grant proposals. 94% had previously reviewed for the FWF and 98% for other funding agencies (Figure 3.1). Nearly all were professors, lead researchers or similar, nearly half aged 60+ (Tables Q1, Q2, Q3 in Appendix 7). This high senior level competence profile of the reviewer pool reflects that the FWF asked for reviewers at the same level as the members of the clusters' board of director members.

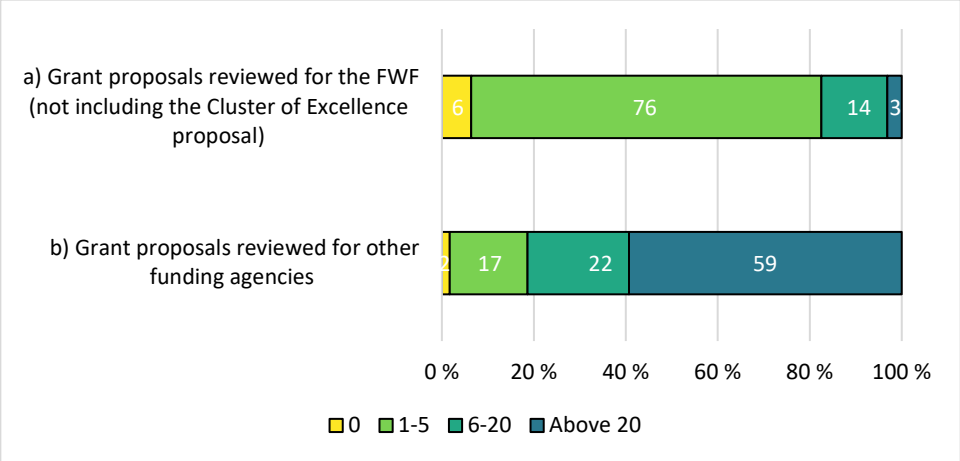

Figure 3.1 Your grant review experience. Please indicate the approximate number of grant proposals you have reviewed in the last 10 years.

Source: NIFU CoE reviewer survey N=63; 59.

[8] E.g. professional or personal connection or 'fundamental differences of scientific or scholarly opinion'. Source: FWF Clusters of Excellence Evaluation Guidelines. FWF and ESF-Science Connect.

[9] Source: aggregated data from ESF-Science Connect. All countries with at least four reviewers were European or from USA/Canada/Australia. These accounted for 86% of the reviewer pool. We do not have information about countries represented with less than four reviews.

Recruitment of jury members. For recruiting the 15 members of the *pre-proposal jury*, in total 46 persons were contacted (not incl. recruitment of jury chair). In other words, the FWF asked on average three experts per recruited jury member. There were large variations between fields in how many requests were needed, but no apparent effect of this on the outcome of the pre-proposal round.[10] For the *full proposal jury,* 22 persons were asked to get an 11-member jury (not incl. jury chair), i.e. two persons asked per accepted invitation. To get overlap/continuity between the review of the pre-proposals and the full proposals, some of the pre-proposal jury members were reinvited – explaining part of the higher acceptance rate among invited full jury members (compared to the pre-proposal jury members).[11] In addition to the field competencies, new types of competencies to assess the strategic parts of the proposals were added for the full proposal jury. Both juries had balanced gender distribution (Table 3.1). The jury members brought with them experience from boards and committees in a variety of funding organisations in other countries.

Table 3.1 Jury composition by gender, country and competencies

	Pre-proposal jury	Full proposal jury
Members (inc. chair)	15 (16)	11 (12)
Female members	50% (8 of 16)	58% (7 of 12)
Countries	9 different countries (all from Europe and North America)	8 different countries (all from Europe and North America)
Members per subpanels/ field category	3 subpanels (SSH, STEM, Life) of 5 members each	3 SSH, 4 STEM, 3 Life
Disciplines represented	1 member per research field/discipline: Biomedical Research; Clinical research; Genetics/Genomics/Bioinformatics/System Biology; Infection/Immunity; Neuroscience; Chemistry; Computer Science; Geoscience; Mathematics; Quantum Science; Media/Communication; Economics; History; Philosophy; Psychology.	1 member per research field/discipline: Genetics/Genomics/Bioinformatics/System Biology; Neuroscience; Molecular biotechnology Chemistry; Quantum Science; Informatics; Geosciences/Climate research; Media/Communication; History; Philosophy/Political science.
Strategic competences	n.a.	3 members (1 in each field category) to assess strategic perspectives of the proposals. 1 member for the science communication perspectives of the proposals.

Source: FWF.

[10] For 9 fields, the first or the second on the list accepted, in three fields number 3 accepted, while the remaining required going further down the list, until number 10 in one case. Three of those listed first on the 'request list' accepted, these were given prime responsibility for in total 6 proposals of which 2 made it to the shortlist. The three jury members hardest to find were also given prime responsibility for in total 6 proposals of which 2 made it to the shortlist.

[11] Six full proposal jury members (incl. chair) overlap with pre-proposal jury. For the full proposal jury, one field competence proved more difficult to find (five asked to get one member in the field).

Leaders of host organisations were content with the organisation of the review process. The interviewed representatives for the host organisation underlined that they were content with the FWF. They have relatively high trust in FWF and as such they assumed the FWF to have done their best to organise a fair review process. Most informants emphasised that they could not really comment in detail on this since it was primarily the applicants who had the first-hand experience and perceptions of the review process.

Most applicants were satisfied with reviewer competence. The applicants appear reasonably well satisfied with 'The competence of the experts reviewing the pre-proposals'; 54% used the upper part of the scale, 15% the lower part (Table Q6e in Appendix 6). Similar figures appear when asked if the reviewers assessing their pre-proposal 'Were able to assess all fields of research involved in the application' (53% used the upper part of the scale, 18% the lower part) and 'Provided a thorough assessment of your application' (55% used the upper part of the scale, 15% the lower part, Table Q7ac in Appendix 6). 57% held that the reviewer competence was about the same as for their other relevant funding sources, while 21% found it poorer and 12% better (Table Q8a in Appendix 6).

Those who did not reach the full proposal stage less satisfied. Notably, those who did not make it to the full proposals stage express far less satisfaction with reviewer competence and thoroughness of the pre-proposal reviews, with an average of 3.1 to 3.2 on the various questions, while the average for those with a successful pre-proposal was 4.3 to 4.4. Still, comparing the replies from the applicants who did not reach the full proposal stage, with replies from the similar group in similar surveys on the Swiss NCCR scheme, the FWF Cluster of Excellence applicants do not appear less satisfied (Table 3.2). As the figures are not all comparable (see notes to Table 3.2), comparing the patterns within schemes make more sense. We see that while in the Swiss scheme the applicants appear less satisfied with the thoroughness of the assessments, for FWF Clusters of Excellence the average scores given by applicants are about the same on all items. Thorough assessments may be a particular challenge in the evaluation of large multidisciplinary proposals, and this appear to have been handled better in FWF CoE than in the Swiss scheme. Still, some (15%) FWF CoE applicants used the lower part of the scale when rating the competence of the pre-proposal reviewers. Among those who commented on this in their survey replies two were particularly concerned about limited expertise in the multidisciplinary jury:

> *The recommendation for inviting projects for full proposals was then made by an international jury in which nobody was familiar with our research topic. Therefore more expert reviews would have been helpful for this jury. […] I have looked into the areas of expertise of the jury members and to me it seems that they have*

mainly selected proposals which are in the area of their own expertise. (Pre-proposal applicant, not shortlisted)

The entire review process was neither transparent nor competent. A multidisciplinary external jury obviously did not prove its worth. One also had the impression that experts were already the reviewers, but that the jury was unable to assess them due to a lack of expertise. (Pre-proposal applicant, not shortlisted)

Table 3.2 Applicants' opinions on the reviewers' competence and thoroughness of the review in pre-proposals. Means by reached full proposal stage or not, scale from 1 (Not at all) to 5 (To a great extent). FWF CoE Call 1 and NCCR call 3, 4 and 5.

6. Considering your Cluster of Excellence application, to what extent did you find the following issues/processes satisfactory? 7. To what degree do you think the reviewers who assessed your pre-proposal:	FWF Clusters		NCCR Call 5		NCCR Call 3&4	
	Full proposal		Full proposal		Full proposal	
	No	Yes	No	Yes	No	Yes
6e. The competence of the experts reviewing the pre-proposals	3.2	4.3	2.7	4.0	2.9	3.6
7a. Were able to assess all fields of research involved in the application?	3.1	4.2	2.5	3.7	3.0	3.4
7b. Provided an impartial and unbiased assessment of your application?	3.1	4.4	2.6	4.0	2.8	3.6
7c. Provided a thorough assessment of your application?	3.1	4.3	2.2	3.9	2.7	3.2
N	64	38	22	14	25	31

Sources: NIFU surveys to FWF CoE applicants 2022 and NCCR applicants 2016 (Langfeldt and Borlaug 2016) and 2020 (Langfeldt et al. 2021). Figures are not fully comparable: The NCCR surveys only addressed the Centre Director and were conducted after the NCCRs were awarded/the selected process completed, while the FWF CoE survey was addressed to both Lead and collaborating applicants.

3.2 Adequacy of review organisation and procedures

The various stages of the review procedures are described in Section 1.1. Letters of Intent were checked for eligibility by the FWF. Each pre-proposal was assessed independently by four expert reviewers, then jointly by an international jury. Full proposals are likewise reviewed both by independent expert reviewers and an international jury. The review criteria included assessments of the research programme, the team of researchers and the research environment. For the full proposals, the reviews also include assessments of the organisational units of the CoE (Training unit; Communication and Transfer unit; Management unit).

In this section we look at the applicants' and the reviewers' (and host institutions'/other stakeholders') experiences and satisfaction with the procedures and criteria.

Applicants were generally satisfied with the review criteria. Overall, the applicants appear satisfied with the pre-proposal review criteria. When rating the adequacy of the review criteria very few used the lower part of the scale (Figure 3.2 below, and Table Q9 in Appendix 6). Average score for 'Adequate criteria for research programme' was 4.1 on the scale from 1 (not at all) to 5 (to a great extent), while for 'Adequate criteria for team of researchers' and 'Adequate criteria for research environment' the average was 4 on both.

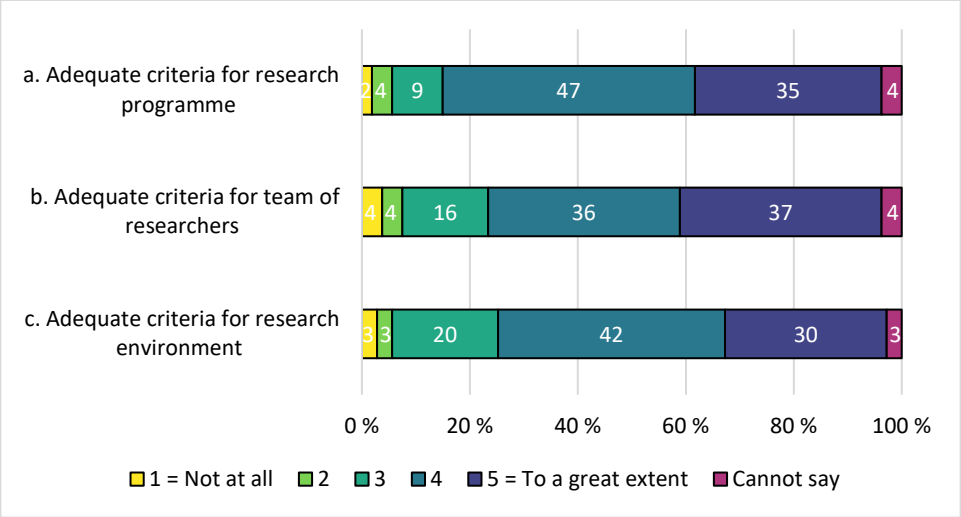

Figure 3.2 To what extent do you think these were appropriate criteria to assess your proposal?

Source: NIFU CoE applicant survey N=107.

Some concerns with the adequacy or clarity of the criteria. When asked to explain any concerns with the adequacy or clarity of the criteria, some applicants expressed dissatisfaction, they thought that criteria or aims of the programme were not clearly communicated, that the criteria were inconsistently applied, or disagreed with the criteria, and some suggested other criteria. For example, there was dissatisfaction with emphasis on gender and societal aspects, different interpretations of potential for innovation, unclarities regarding requirements for publication in top journals[12] and creating new clusters, and it was suggested to assess national strategic and structural significance, and collaboration to overcome national constraints:

Unclear aims/criteria:

> *It was somehow unclear whether the program was aimed to support the consolidation of existing clusters or the creation of new ones. (Pre-proposal applicant, not shortlisted)*

Inconsistent use of criteria:

> *reviewers seem not to have completely the same expectations as to how far the research shall be groundbreaking, solid fundamental, application oriented, applied or the mix of all. E.g. potential for innovation was sometime interpreted as actually doing proof-of-concept or translational activities or only to always check for potential in fundamental research. (Pre-proposal applicant, not shortlisted)*

[12] In one case where the level of publications had been commented on in one of the review reports the applicant perceived that 'lack of top publications' had been a reason for rejection, even when the level of publications was not mentioned in the jury statements or as a reason for rejection.

Disagreed with the criteria:

Some issues like gender and societal aspects are overrated. An important criterion should be the applicants' research compared to the best of their peers in the world. (Pre-proposal applicant, not shortlisted)

Missing aspects/Other criteria suggested:

I would think the national strategic significance of the proposals and research fields could be more in the foreground (= how is a proposal relevant to Austria and why). It certainly is important how a proposal [fares] in the international context yet one could also argue that how this funding brings tangible benefits to the Austrian taxpayer could also be better highlighted. In addition, the question if basic (discovery) research (= blue sky research) or applied end-points are expected and shall be prioritised could be defined with more clarity for future rounds of applications. (Pre-proposal applicant, shortlisted)

The strong requirement of added value is more difficult to fulfil in the large consortia that are required from the structure of the clusters of excellence. The criteria do not include structure formation in the Austrian landscape that is part of the general goals of the program excellent=austria. (Pre-proposal applicant, not shortlisted)

The legal, institutional, bureaucratic and historical constraints within Austrian Universities will usually not be familiar to reviewers. However, in my own experience, overcoming local Austrian constraints or limitations is often a key part in achieving international level quality. It would be useful if the selection process rewarded the extent to which the proposal shows that the researchers and their institutions show that they can collaborate to overcome such constraints. That would seem a more honest dimension of evaluation than the "research environment" with the current criteria. (Pre-proposal applicant, shortlisted)

The reviewers generally agreed with the review criteria. In the survey, the large part of the reviewers used the upper part of the scale when indicating the adequacy of the review criteria used in assessment of the pre-proposals. Highest support was given to 'The quality of the research programme, in particular in an international context' (82% top on adequacy) and 'The composition of the team and how suitable it is for meeting the research programme's goals' (75% top on adequacy, Figure 3.3). Lower support was given 'gender- and sex-related components of the research question and the approaches chosen' with an average on 3.5 on the scale from 1 ('Not at all appropriate') to 5 ('To a great extent appropriate') (Appendix 1, Table A1). Female reviewers somewhat more often found this criterion adequate (women 3.6, men 3.4), which may indicate that they more often are in fields where gender aspects are seen as relevant. Regarding the adequacy of the gender-and-

diversity-of-team criterion (h), male and female reviewers gave similar scores (3.8, Appendix 1, Table A1). Some of the reviewers' provided comments explaining their replies and indicating that gender and diversity were considered important, but not a main criterion:

> *While I strongly support the diversity measures and criteria in academic research, I consider the quality of the proposed research (synergies, innovation potential) as main criteria for my evaluation. (external reviewer)*

> *gender balancing is an additional policy criterion that should be applied (if necessary) by non-scientific assessors. (external reviewer)*

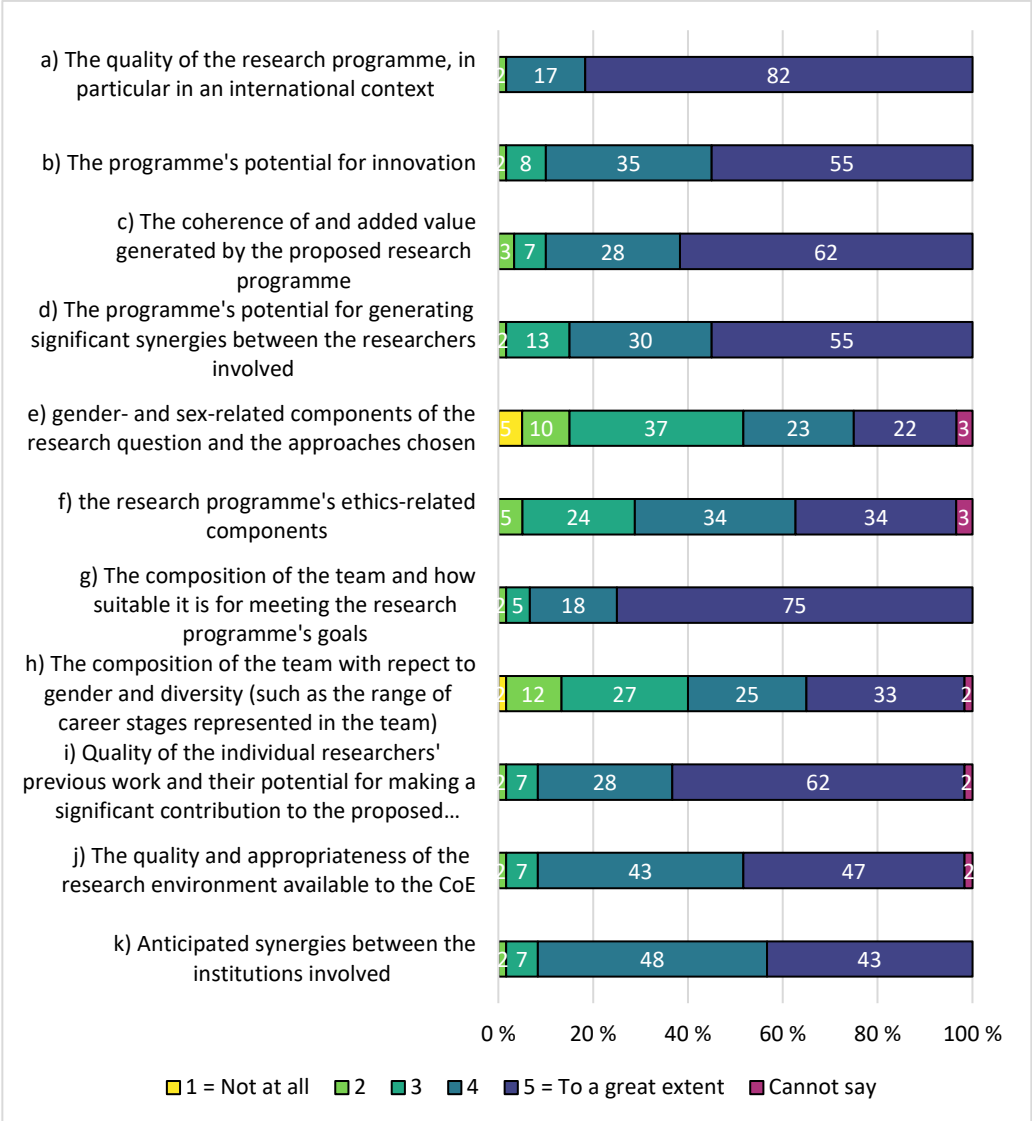

Figure 3.3 Adequacy of the review criteria: The FWF asked the reviewers to assess the proposals on the following criteria, please indicate whether you think it is an appropriate criterion for assessing these proposals.

Source: NIFU CoE reviewer survey N = 59; 60.

Most reviewers found criteria clear and the assigned proposal close to their expertise. When asked about the comprehensibility of the review criteria and their ability to assess the proposals, a large majority of the reviewers appeared very satisfied. Nearly all reviewers used the upper part of the scale, and a majority gave top scores on these survey questions (61–82%, Figure 3.4). 82% replied that they to 'a great extent' were able to give an overall assessment of the proposal assigned to them, while 61% replied that they to 'a great extent' were able to assess the research environment. The large majority also agreed that the review criteria, and the review guidelines, were clear and easy to understand, that the proposal they reviewed was close to their field of expertise and that they were able to assess the research programme and the team of researchers in the assigned proposal.

Unclarities about pre-proposal stage and requirements. Still, some the reviewers commented that project descriptions were short, and they missed information on the various stages of the application and review process that could have clarified their role in the process:

> *It was not entirely clear to me whether the research projects will be described in greater detail in a later stage of the evaluation because individual projects were described rather superficially because of the page limit of the application. (external reviewer)*

> *There were 2 big problems I highlighted re the one application: (a) no detail of practical plans was given: no timeline, GANTT, workplans etc., nor anything on infrastructure – thus I couldn't answer the 'research environment' issue; (b) the team was actually very skewed towards seniority, one HEI & one part of the topic – but was this required?? No info. (external reviewer)*

> *[...] The Guidelines did not explain why pre-proposals were so short on info. The application was 120pp long, with pp. 37–120 taken up with Appendices. The actual proposal is 30pp (minus bib) & yet even so there is loads of repetition & no FACTS (= plans, case studies, work programme, timeline). (external reviewer)*

> *There were so many specific projects associated with the cluster, but too little space in the proposal available to explain the specifics of each project. Each one would typically be reviewed separately. It's just a challenge associated with such a large initiative that adequate feedback can't be provided for each associated sub-project. (external reviewer)*

Similar concerns were voiced in the review reports; in the sections addressed exclusively to the FWF some reviewers commented that the lack of details in the pre-proposal gave the assessor 'very little to go on', and they would like more information on e.g. management, budget or research training. It was unclear to them

whether this was a problem of the particular proposal, what was expected at the pre-proposal stage or a result of proposal page limits. Some also commented that it was hard to assess and grade one proposal without seeing any of the other proposals. In short, whereas most reviewers found the criteria clear and proposals to be close to their expertise, some were concerned that they lacked information about the pre-proposal requirements and expectations[13], which further may impact their ability to provide fair assessments. This was also commented upon by interviewed jury members. While they generally found the review reports to be good and useful, some of the individual reviewers had not understood the pre-proposal requirements, and asked e.g. for preliminary data. Or they did not understand what it took to write a review that was useful to a multidisciplinary panel and did not give clear/sufficient details and argument for their conclusions and grades.

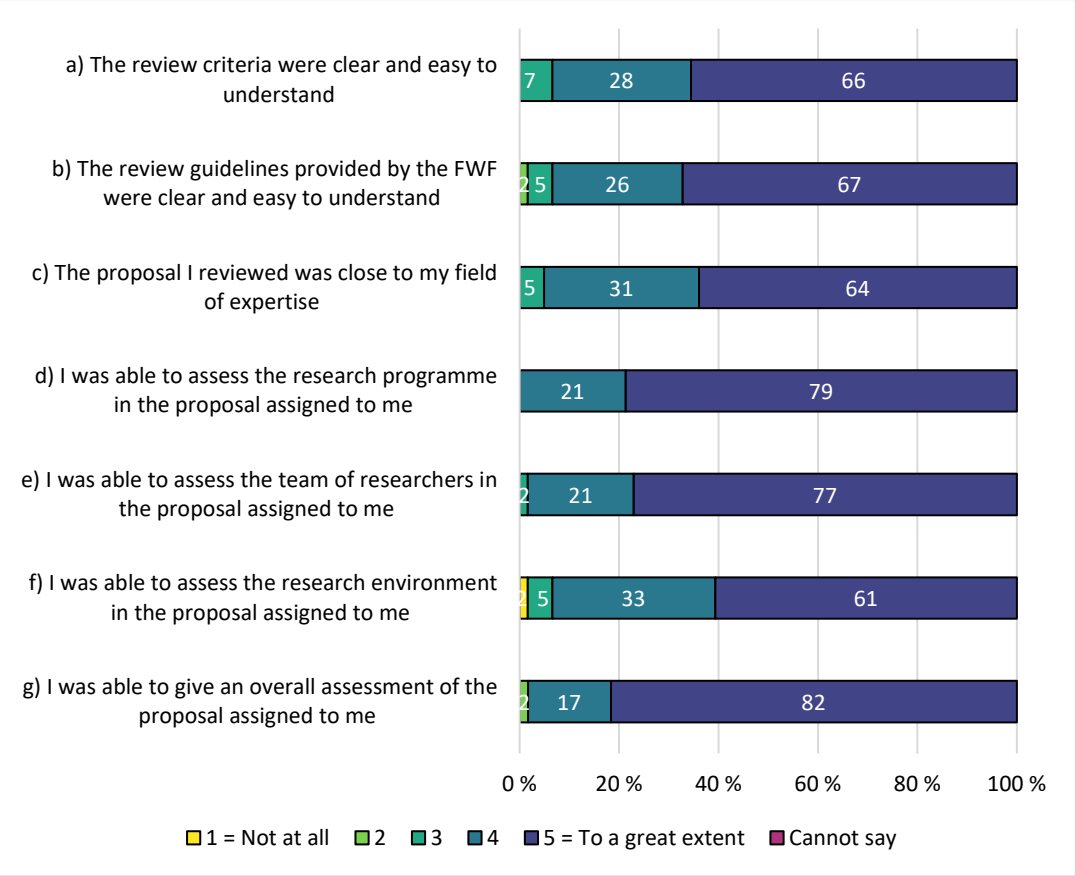

Figure 3.4 Comprehensibility of criteria and ability to assess the Clusters of Excellence proposal. Please indicate to what extent you agree with the statements.

Source: NIFU CoE reviewer survey N = 60; 59.

[13] Notably, the terms and procedures were explained in the guidelines to the reviewers, but still did not appear well understood by all.

Jury's shortlist and FWF Board approval

Smooth jury negotiations. In a two-day digital meeting, a 16-member jury discussed and rated each pre-proposal. There was time for thorough discussion of each pre-proposal, the first day in one[14] of three subpanels (see Section 1.1). On the second day, 13 proposals which concluded the first day with top grades (A or B), were discussed in plenary. The assessments were based on the jury members' reading of the proposals and the individual reviews – each prepared by two jury members – and overviews of the individual reviews provided by the FWF. Joint rating of each proposal was concluded without direct comparison of proposals. The jury appeared generally well satisfied with the review organisation and procedures.

Frustration in the FWF Board. The jury's recommended list of 11 clusters to be invited to submit full proposals was approved in a meeting in the FWF Board. Due to the composition of the Board – it represents the broad scope of institutions eligible for the CoE programme – conflicts of interest were a major concern. This restricted both who was present in the meeting, the information on the proposals and assessments communicated to the FWF Board and the Board's possibilities to impact the shortlist. Some Board members were critical of the organisation of the selection process. In particular they found it unclear whether the jury or the Board was responsible for decisions, and hard to approve the shortlist without access to review details and information on the proposals that were not on the shortlist. Two FWF Board members abstained from the final voting on the shortlist on such grounds.

Misconceptions about decisions. Some of the interviewed leaders of the host organisation raised a question regarding the geographical and field distribution of the invited full proposal. They called it a political process and argued that such distributional concerns should have been more openly communicated to the research community. Many staff – both scientific and administrative – had invested considerable resources into the application, and thus the perceived 'political' shortlist generated discussions and discontent among some researchers.

3.3 Jury recommendation and final selection

The last phase of the selection process included hearings with the 11 full proposal teams, which took place in Vienna on 16–17 February 2023. There were 60 minutes for each proposal, of which the applicants could spend a maximum of 30 minutes for presentation, and a minimum of 30 minutes for Q&A. The jury then had 20 minutes for discussion and breaks between the proposals. The following

[14] 12 pre-proposals were assessed with expertise from two subpanels, see Chapter 2.1.

day, the jury discussed final assessments and concluded on a list of five proposals recommended for funding. The FWF Executive Board was present during the hearings with the applicants, but not during jury deliberations.

Mixed applicant experiences. The applicants expressed mixed views on the hearings. It was said both that the hearings were good and the jury professional, and that the jury's questions were irrelevant and the jury lacked competence in the fields of specific proposals and in interdisciplinary research. Some suggested the individual review reports should be distributed to the applicants in advance and the hearings more directly structured around discussing important issues regarding the proposed research. The competence profile and role of the jury appeared unclear to applicants, and it seems that non-funded applicants perceived the jury to have more competence in the fields of the funded proposals than in their rejected proposal. In sum, applicants desired more and clearer information, earlier access to review reports and hearings more structurally focused on the proposed research. Moreover, it was emphasised that the long multi-stage application and selection process – with multiple teams involved – had been exhausting, and many other important tasks put on hold. Hence, some simplification of future processes would be appreciated, e.g. fewer selection steps or stricter selection at the first stage, i.e. inviting fewer full proposals.

Flexible and unclear jury roles. The allocation of review tasks among jury members had been explained in an email to the jury, which said that:

> *'For each proposal, we have designated two jury members who are primarily responsible for the evaluation/presentation of each proposal during the jury session. If you are jury member 1, this means that your expertise is closest to the topic of the proposal. If you are jury member 2, then your expertise is the second closest.'*
> *'We also have designated a third jury member for each proposal who is primarily responsible for the evaluation of the Management Unit. Furthermore, for each proposal [name] is responsible to evaluate the communication and knowledge transfer unit. We would be pleased if you would also familiarise yourself with the other proposals, of course in less detail.'*

The task division and various competencies were still not clear to all jury members in advance of the meeting. The role of members appointed for doing 'strategic' review (new task to the full proposals jury) was ambiguous. As these members in some cases had expertise in the field of the proposal they would comment on the 'Research Unit' of the proposal, while the other jury members also commented on the 'Management Unit'. Moreover, some had not seen the overview available in the portal listing the 3rd reviewer for each of the proposals. While this flexibility in roles and tasks gave room for making use of the competencies in the jury, it also gave some arbitrariness in terms of different focus for the assessment of each

proposal: for some proposals the research was discussed by multiple jury members – in the hearings and in the jury only sessions – for other proposals mainly other aspects than the research were discussed (e.g. the Training unit, Management Unit or Communication Unit). The extent to which the external reviews – and how to compare and calibrate reviews – were discussed, also differed.

Suboptimal information acquisition. Moreover, some issues regarding applicants' situation were not clear to all jury members in advance, but were clarified during the hearings with the applicants: in preparing the full proposals, it was not permitted to change any members in the board of directors listed in their proposal, or to add any key researchers or associated researchers. Hence, there were some limitations to how applicants could amend proposals and respond to the pre-proposal reviews (applicants could still indicate planned changes in the case of a successful proposal). Furthermore, the applicants did not have access to the expert reviews of their full proposal (these were not forwarded to applicants until after funding decisions were concluded). Hence, applicants had not prepared to respond to these reviewer comments.

Clear guidelines for jury's assessment. The jury was asked to employ the following selection criteria:

1. '(most) innovative & outstanding research
2. (most) outstanding & suitable team (BOD and key researchers), also with regard to gender and diversity
3. (maximum) value added (to the cooperation and between the institutions) and all additional units
4. No quota for disciplines, but if the quality allows, a reasonable distribution between disciplines' (Jury Briefing/PowerPoint, November 2022).

At the start of the discussions, the jury chair emphasised that quality of the research and the research team were to be the prime criteria for their list of proposals recommended for funding. Assessments of other aspects of the proposed clusters were mentioned as important and to possibly be used to separate between proposals with equal scores on the prime criteria. Notably, at the jury's request, the applicants had been asked to present all units of the proposals and address strategic importance, synergies and diversity.[15]

[15] Information from the FWF to the applicants, December 2022: 'All units of the proposal and of course the quality of the consortium itself are relevant to the decision and should be presented. Please clearly address the following aspects in your presentation. ▪ Strategic importance of the COE at the national and inter-national level. ▪ Plan to ensure synergies between the participating re-searchers. ▪ Plan to ensure equality and diversity in the COE, including benchmarks to be achieved. ▪ Elements and activities in the training unit and also in the communication and transfer unit that go beyond what is already in place in the participating research institutions. The members of the COE full proposal jury represent a wide range of disciplines. For this reason, please make sure that your project presentation is also understandable to researchers outside your discipline'.

Jury conclusions complied with expert assessments. In their final deliberations, the jury first agreed on which proposals were the weakest, then on which were the strongest, then they discussed and ranked the remaining proposals. The result was in line with the grades from the external reviewers: The four proposals with the best overall average grades (1.0 to 1.75, 1=outstanding), and one of the next four proposals with similar grades (these had average overall grade 2/excellent) were funded. Average grades by criteria for funded and unfunded proposals are shown in Table A4/Appendix 1. The list of five clusters to be funded was compiled based on the prime criteria and the assessments of the external experts. In one case it was discussed if two proposals judged to be equally good on the prime criteria could be separated based on their Training units, Communication units or Management units, but the jury did not manage to do so (and both were funded). Disciplinary, gender or institutional distribution was not part of the jury discussions. There was still better gender balance for the awarded clusters than for the pre-proposal or full proposal stages. Gender distribution by proposal stage is shown in Table 2.7/Chapter 2.

Consistency between the two rounds of review. With one exception, the funded proposals were those that had received the best grades in the pre-proposal round. The one exception was one that received top grades in the pre-proposal round (overall average grade 1.0 on the scale from 1 to 5),[16] but not in the full proposal round (overall average grade 2.25 on the scale from 1 to 6).In line with standard FWF procedure, the grades from the pre-proposal round were not part of the basis for the jury's discussion or the interpretation/calibration of the review grades. Each full proposal was to be assessed based on the full proposal reviews only. In this respect there were some inevitable asymmetry in jury members' information: those who served on the pre-proposal jury would have memories of the pre-proposals they reviewed, while new jury members had no information.[17]

Multidisciplinary proposals did not make it. The most multidisciplinary full proposals – defined as the four full proposals that had been assessed by two pre-proposal sub-panels – were not funded (Table 2.2). The proposals that were more mono-disciplinary (had been reviewed in one subpanel only) generally received better grades from the external reviewers, while there was more variance/disagreement between the reviewers on the four most multidisciplinary proposals (Table A5/Appendix 1). Facilitation of multi/interdisciplinary research was not a dedicated aim of the CoE call, and was not discussed as a concern or priority in the

[16] Moreover, one pre-proposal that received overall average grade 1.25 did not make it to the full proposal round.

[17] The jury did not receive information about which expert reviews were written by reappointed experts and which by new experts, but in some cases this could be learnt from the reviews, as some reviewers would refer to the pre-proposal/changes to the full proposals.

jury deliberations.[18] Recalling that in Chapter 2 we concluded that there were no apparent biases against multi-disciplinary *pre-proposals*, we need to add that even though a slightly higher percentage of multi-disciplinary pre-proposals (than pre-proposals discussed in one subpanel only) made it to full proposals round, the multi-disciplinary pre-proposals were not among those with the best grades (Table 2.10). Also in the pre-proposal round, none of the proposals discussed in two subpanels were among the five with the best overall average grades from the expert reviewers. As explained above, the grades in the pre-proposal and full proposal round generally concurred, and basing decisions on the five with the best expert grades – in either round – would not lead to funding any of the (supposedly) most multidisciplinary proposals.

Vienna-centred clusters. Four of the five funded CoEs were led by an institution located in Vienna (Table 2.4), and 60% of all the members of their boards of directors were located in Vienna (Table 2.5). Hence, while we in Chapter 2 concluded that at the first stages of the selection process, the geographically diversity was greater than could be expected, this was not so at the last stage. Whereas Vienna generally accounts for 60% of FWF grants, Vienna leads 80% of the CoEs and has 60% of the members in their boards of directors.

Concluding Board meeting: more information and less frustration. For approving the jury's list of clusters to be awarded, the FWF Board was presented the jury's statement on each of the 11 full proposals (same text as for feedback to the applicants), as well as the overall grades from the four expert reviewers for each proposals.[19] Board members were content that they were provided with more information on assessments and the full list of full proposals, and the juries recommendations were approved without much discussion. It seems the role of the Board was more clearly understood and 'settled' in advance of the decision-making, and the Board members expressed less frustration with this process than regarding the Board's approval of the shortlist of pre-proposals. There were still Board members who would like more transparency regarding the jury discussion, and suggested selected Board members should have the possibility to observe the process. Some wanted information about how decisions were taken in the 'grey area', i.e. those selected below the very top rated proposals, and it was said that the Board lacked information on the jury's competencies relating to each of the proposals. Moreover, it was asked for information about how gender balance was taken care of, as well as the reasons for (and consequences of) the change in grading scale from the pre-proposal to the full proposal round (from a 5-grade scale with 'Excellent' at top, to a 6-grade scale with 'Outstanding' on top of Excellent).

[18] The call said the clusters were to enable cooperative research in one area or multiple disciplines, it did not state that multi- or interdisciplinary research was a priority.

[19] Board members with a conflict of interest left the room under the respective presentations, and their handout (handed in at the end of the meeting) did not contain information on those projects.

Taken together, we find that the criteria for the jury's assessments were clearly stated, and overall the jury's conclusions complied with the expert assessments. There was high consistency between the two rounds of expert reviews (with one exception, the same proposals received the best grades in both rounds) and the jury's conclusions were based on the quality of the research and the research teams. The secondary criteria – training, communication and management – did not come into play when concluding the list of proposals recommended for funding. Notably, none of the broadly multidisciplinary proposals were among the five with the best overall average grades from the expert reviewers and none of them were funded. Disadvantage for multidisciplinary and interdisciplinary research is a well-known phenomenon in grant review (Banal-Estañol et al. 2019; Bromham et al. 2016; Langfeldt 2006), and to promote such research will often take explicit priorities and review criteria for multidisciplinary proposals. Disadvantage for interdisciplinary research was a concern of interviewed applicants. The applicants also expressed concerns about insufficient information, and desired hearings more focused on the proposed research.

While the jury's *conclusions* appear straightforward and well justified, we also see some aspects of suboptimal information and information asymmetry in the jury, and arbitrariness in the jury *discussions*. (1) There were issues regarding applicants' situation which were not clear to all jury members in advance, but were clarified during the hearings with the applicants. (2) There was flexibility in the division of tasks between jury members which gave room for making use of the competencies in the jury, but also some arbitrariness in terms of different focus for the assessment of each proposal. (3) The jury members who also served on the pre-proposal jury had more insight into the selection process and the CoE programme than the new jury members, including memories of pre-proposals and their assessments in the pre-proposal round. (4) There was also information asymmetry between the (majority of) jury members who were present in Vienna and those who participated online, i.e. the kind of asymmetry in informal information sharing that is hard to avoid with a hybrid meeting[20].

3.4 Conclusions

General satisfaction with review criteria

Both applicants and reviewers expressed satisfaction with the review criteria, and they appear to be in agreement on what should be the most important review criteria. In both groups, individual respondents emphasised that the proposed

[20] The hearings were planned as an onsite event, The hybrid solution was set up two days before due to unforeseen circumstances/to ensure all jury members could participate.

research and not gender/diversity should be the main criterion. The criteria's relative importance and weighting, though, did not seem clear to applicants.

Varied satisfaction with reviewer competence

Whereas the applicants appeared satisfied with the review criteria, there were some concerns about how they were applied and the quality of reviews. Among those passing to the full proposal stage we find high satisfaction with reviewer competence, while those not passing were moderately satisfied. This is the same pattern as seen in studies of other funding schemes, and it is hard to know when proposals are rejected because of inadequate reviewer expertise and when dissatisfaction results from being rejected. Moreover, there is a concern that for some proposals it was hard to find matching reviewer competence, and in the survey a few reviewers reported limited expertise match to pre-proposals. Still, overall applicants were satisfied with the reviews, the FWF CoE scheme comes out relatively good on this when compared to other funding schemes, and the analysis in Chapter 2 did not find evident selection biases at the pre-proposal stage.

Shortlist: Smooth jury process, frustration in the FWF Board, and misperceptions at host organisations

The international jury's evaluation of pre-proposals to be recommended for full proposals, was a relatively smooth process in which each proposal was first discussed and rated in a sub-group of the jury, then in plenary – where rates were adjusted and a shortlist of 11 clusters concluded. While the jury appeared well satisfied with the review organisation and procedures, the FWF Board meeting set to approve the shortlist caused frustration. Due to conflicts of interest in the FWF Board, who was present in the meeting and the information on the proposals and assessments communicated to the Board was limited. This caused unclarities in the Board's responsibilities regarding the shortlist decision. Moreover, while the interviewed representatives for the host organisations were content with the organisation of the reviews, some were rather sceptical about the final short list, suspecting that this was based on a political decision due to the geographical and field distribution of shortlisted proposals.

Final selection: In line with expert assessments, multidisciplinary research disadvantaged

The criteria for the jury's assessments were clearly stated, and overall the jury's conclusions complied with the expert assessments. There was high consistency between the two rounds of expert reviews (with one exception, the same proposals received the best grades in both rounds) and the jury's conclusions were

based on the quality of the research and the research teams. There were, however, concerns regarding suboptimal information and information asymmetry in the jury, and arbitrariness in the jury discussions: flexibility in the division of tasks between jury members increased the possibilities for benefiting from the competencies in the jury, but also gave some arbitrariness in the focus of the assessments and hearing questions. There were issues regarding applicants' situation which were not clear to all jury members in advance of the hearings (requirement to keep the pre-proposal team; no access to review reports). There was information asymmetry between jury members who had served on the pre-proposal jury and those new to the full proposal jury, and between those who were present in Vienna and those who participated online. A further possible concern – even when multidisciplinary/interdisciplinary research was not a stated priority in the call for proposals – was that none of the broadly multidisciplinary proposals were funded.

4 CoE programme design and management

This chapter addresses whether the organisation and implementation of the selection process contributed to impartial, transparent and efficient review and selection of proposals. Focus is on the comprehensibility and satisfaction with programme terms and procedures as perceived by the involved stakeholders.

4.1 Transparency and Impartiality

Transparency and comprehensibility

Terms and requirements were generally perceived as clear. The large majority of applicants used the upper part of the scale when rating the clarity of terms and requirements for the Letters of Intent (76%) and a majority also found the terms and requirements for the pre-proposals clear (64% rated 4 or 5, Table 4.1). Still, some applicants commented in the survey that proposal requirements or the review process had not been clear to them, e.g. they had misinterpreted the level of detail needed for the individual project descriptions in the pre-proposal, or thought the pre-proposals were to be assessed by field experts only, not a multidisciplinary jury.

Some dissatisfaction with transparency. 29% used the lower part of the scale on transparency regarding decisions on the pre-proposals round (Table 4.1), and 28% found it poorer than for other relevant funding sources (Table 4.2). In particular, those who did not pass on to the full proposal stage were dissatisfied: of these, 37% found the transparency inferior to other funding sources (Table A3), and on average they scored transparency regarding decisions on the pre-proposals 1.1 points lower than did those who made to the full proposal stage (Table 4.1). Still, when comparing with similar figures from the Swiss NCCR scheme, the FWF CoE applicants, both those who made it to the full proposals stage and those who did not, appear more positive. For FWF CoE the former group on average scored 4.0 on transparency of decisions, while for NCCR they scored 3.1. The latter group, on average scored 2.9 for FWF and 2.1 for NCCR (Table 4.1 below vs. Table 4.1 in Langfeldt et al. 2021).

Some not satisfied with clarity of feedback on pre-proposals. While half the applicants appear well satisfied with the clarity and the completeness of the feedback

to applicants (51% used the upper part of the scale), some appear dissatisfied (22% used the lower part of the scale). Again, we see that those whose pre-proposal was rejected were less satisfied: on average they rated this item 1 point lower on the scale from 1 to 5, than did the applicants with a successful pre-proposal (Table 4.1).

Table 4.1 Applicants' satisfaction with clarity, transparency and feedback. Percentages and means.

Question 6: Considering your Cluster of Excellence application, to what extent did you find the following issues/processes satisfactory?	1 = Not at all	2	3	4	5 = To a great extent	Cannot say	N	Means (1-5) Shortlist	
								No	Yes
a. The clarity of terms and requirements for LoI	1.8	8.3	10.1	53.2	22.9	3.7	109	3.7	4.3
b. The clarity of terms and requirements for pre-proposals	2.8	10.2	19.4	45.4	18.5	3.7	108	3.6	3.9
f. The transparency regarding decisions on the pre-proposals round	12.0	16.7	20.4	22.2	20.4	8.3	108	2.9	4.0
g. The clarity and the completeness of the feedback to applicants	8.3	13.9	23.2	37.0	13.9	3.7	108	3.0	4.0

Source: CoE applicant survey.

Impartiality and fairness

Varying confidence in the selection process. One third of the applicants replied that their general confidence in the FWF CoE selection process was lower than for other relevant funding sources (Table 4.2, item e). The majority of these are applicants whose pre-proposal was rejected (Table A3, appendix 1). Comparing with similar data from the Swiss NCCR selection (Langfeldt et al. 2021, Table A4), the level of confidence is about what one would expect. For understanding variation in confidence, varying reviewer expertise is an important factor. As shown in Chapter 3 (Figure 3.4), the majority of the reviewers (64%) found that the assigned proposal to a great extent (i.e. top rate '5') was close to their field of expertise, while for the remaining the expertise was less close (31% still used the upper part of the scale/rated '4' and 5% mid-scale/rated '3'). The jury also commented that the quality of reviews varied. We do not have data to combine applicant confidence and match of reviewer-expertise to proposals, but expect applicants who received reviews based on limited competence, and a rejection of their pre-proposal, to have lower confidence in the process.

No general concerns with ethical standard of the selection process. Most applicants considered the impartiality, ethical standard and handling of confidential information to be the same as for other relevant funding sources (or they did not know, Table 4.2 items c and d). Their view on impartiality varies somewhat by the success of the pre-proposal: 15% of those who had their proposals rejected replied that the impartiality and ethical standard were poorer than for other relevant funding sources, while none of those invited for full proposal thought so (Table A3, Appendix 1). When asked more specifically about the impartiality of the

assessment of their proposals, a majority is still positive (52% used the upper part of the scale, 19% the lower part, Table Q7b in Appendix 6). On average, those who made it to a full proposal scored 4.4 on the scale from 1 to 5, while those who did not scored 3.1. For both groups this is higher than for the Swiss NCCR scheme (Table 3.1).

Table 4.2 Confidence, impartiality, transparency: FWF Cluster of Excellence scheme compared with other relevant funding concerning, applicants' views. Percentages.

Question 8: When comparing to your other relevant funding sources, is the FWF Cluster of Excellence scheme poorer, about the same or better, concerning:	Poorer	About the same	Better	Cannot say	N
b. The transparency of the selection process	27.8	53.7	10.2	8.3	108
c. The handling of intellectual property and confidential information	3.7	47.7	0.9	47.7	107
d. The impartiality and ethical standard of the selection process	9.3	58.3	2.8	29.6	108
e. Your general confidence in the selection process	33.0	55.1	8.3	3.7	109

Source: CoE applicant survey.

4.2 Programme implementation

Satisfaction with programme terms. The applicants appear generally satisfied with the terms of the programme. In the applicant survey, the FWF CoE scheme comes out better than other relevant funding schemes regarding the amount of funding and the impact on the prestige and career of the awarded researchers (about half of the respondents reply better, few reply poorer). About one quarter of the respondents find the FWF CoE scheme better regarding flexibility of use of funds and support for young scientists. Most of those remaining did not see a difference or could not reply (Table 4.3).

Table 4.3 Programme terms: FWF Cluster of Excellence scheme compared with other relevant funding concerning, applicants' views. Percentages.

Question 8. When comparing to your other relevant funding sources, is the FWF Cluster of Excellence scheme poorer, about the same or better, concerning:	Poorer	About the same	Better	Cannot say	N
g. Impact on the prestige and career of the awarded investigators/ researchers	7.4	28.7	48.2	15.7	108
h. Amount of funding	14.7	25.7	54.1	5.5	109
i. Flexibility of use of funds	16.8	37.4	25.2	20.6	107
j. Support for young scientists	6.5	53.7	23.2	16.7	108

Source: CoE applicant survey.

Adequate programme policies. Applicants also appeared positive about the adequacy of the programme for obtaining the programme objectives. 66% replied that programme policies were appropriate for enabling achievements that could not be reached by individual research units (creating synergies between research environments) and 72% for establishing long-term, internationally leading research

fields in Austria – i.e. these applicants used the upper part of the scale when replying to the questions about programme policies (Figure 4.1 and Table Q11 in Appendix 6).

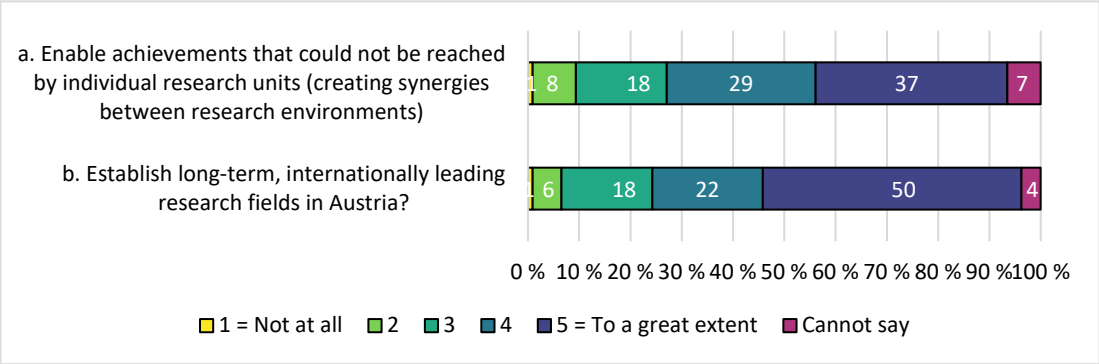

Figure 4.1 To what degree does the scheme provide the appropriate policies to ...

Source: NIFU CoE applicant survey N=107.

Satisfaction with support from the FWF. A majority of the applicants expressed satisfaction with the support from the FWF in preparing their CoE proposal: 59% used the upper part of the scale, 6% scored '2' and no one scored '1' (Table Q6c in Appendix 6). Overall, they appear more satisfied with support from the FWF than from their home institution (average score is 3.9 for FWF and 3.3 for the home institution).

Reviewers mostly supportive of the programme. A majority of the reviewers indicated that the policies and review procedures of the FWF CoE scheme were appropriate to 'Establish long-term, internationally leading research fields in Austria' (92% used the upper part of the scale) and to 'Enable achievements that could not be reached by individual research units' (90% used the upper part of the scale, Figure 4.2). In their open comments some concerns were raised about how to achieve the programme goals, and the importance and challenges of the reviews and selection process in this. These regarded the size and breadth and possibilities for synergies in the Clusters, while it was also held that the large amount of resources to be spent would be a boost for the selected fields in Austria:

> *In order to achieve these important goals, however, the review must not shy away from also making clearly critical assessments. (external reviewer)*

> *Potentially both these criteria are fulfilled. The one application was massive & exciting, but as I say the synergies might not be so great as the team was skewed to one HEI, senior people, one half of the topic; indeed most of them had already worked together. And quality was impossible to assess in any practical way. (external reviewer)*

To really establish a research field I found the proposal I was sent rather too vast: it may establish fields in the plural, but certainly not a field. (external reviewer)

Spending that much money will almost ensure that Austria's international reputation in the field of study supported by the Cluster of Excellence will be enhanced. (external reviewer)

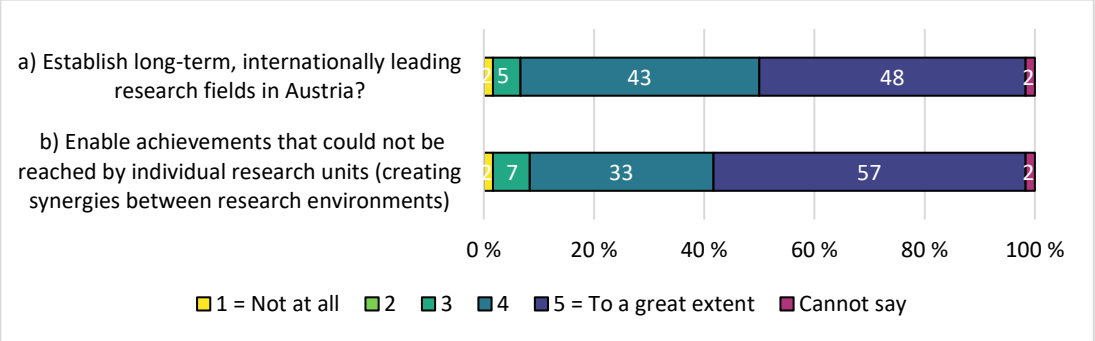

Figure 4.2 In your opinion, to what degree does the FWF Clusters of Excellence scheme provide the appropriate policies and review procedure to …

Source: NIFU CoE reviewer survey N=60.

Worries related to concentration of future funding. Some leaders of host institutions expressed some worries concerning future funding. This related to the extent to which the excellent=austria initiative would be complementary to priorities identified by the EU, or if it would be something else. If complementary, getting supportive EU funding would be one way to expand and possibly sustain the clusters. Another worry was that future national grants would support the clusters leading to a concentration on certain themes of research. Hence, some expressed a concern for not being 'onboard the train' from the start if this kind of turn happens.

4.3 Costs and efficiency

Some concern among applicants about cost and efficiency. When asked about the time and efforts needed to prepare a pre-proposal, the majority rates it positive (43%) or neutral/mid-scale (32%), while 26% rate this negative (use the lower part of the scale). The Directors scored this a bit lower (average 3.0) than the BOD members did (3.2), i.e. they were more concerned about the time and effort needed for the pre-proposals. Compared to these figures for the pre-proposals, there was less concern about the time and effort needed to prepare a Letter of Intent (10% negative) and the time from submitting the pre-proposal to the result of the pre-proposal round was announced (20% negative, Table in appendix Q6hij). While most seem satisfied, a substantial part of the applicants considered the time and efficiency in the application and selection process as poorer than in their other

relevant funding sources (58% reply the same, 28% reply poorer and 12% better, Table Q8f in Appendix 6). Overall, the applicants appear reasonably satisfied with time and efficiency, and their major concern in this – and for the Directors in particular – was the time and efforts needed to prepare the pre-proposal. Here the FWF CoE scheme scores clearly below the Swiss NCCR scheme: whereas for FWF CoE 40% rate positively and 38% rate this item negatively, figures for the NCCRs are 62% positive and 16% negative (replies from main applicant/director, Langfeldt et al. 2021, Table 5.1). Here it needs to be taken into consideration that due to the timing of the surveys, figures are not comparable between the two funding instruments. For the Swiss NCCR scheme, applicants provided their views on the pre-proposal phase after the last stage of the selection process was completed, while for the Austrian CoE scheme they gave their views shortly after having received the results of the pre-proposal round. In the free text comments in the survey to the FWF CoE applicants we see some issues that may explain the relatively lower satisfaction with time and resources. Many of those commenting were concerned about the timing of deadlines – requiring work to be done during summer vacation – while some commented that guidelines came late/should be there from the start, or that cost rules/in-kind contributions were complicated (Textbox 4.1). In other words, some of the explanation of lower scores are likely to be that it was the first call and guidelines came late and were complicated for applicants.

Textbox 4.1 Applicant free text replies on time and efforts concern (Q12)

Time/deadlines

The biggest inconvenience in preparing the pre-posal was the timing of the dead lines, which required a substantial part of the preparations to be done during the summer period where many participants are attending different conferences (amplified by the effect that consortia are very broad) or on vacation. (Pre-proposal applicant, not shortlisted)

My only criticism is that the timing of the period between the announcement of the pre-proposal result and the submission date is very challenging, given that it coincides with the standard European holiday period and the beginning of the academic year. Otherwise this is a very well managed process. (Pre-proposal applicant, shortlisted)

Proposals demands

Maybe make the pre-proposal process more lightweight. My impression is that topics like "management" were not really relevant to the reviewers anyway. (Pre-proposal applicant, not shortlisted)

the three-stage application is very exhausting in parallel done with work overload. (Pre-proposal applicant, shortlisted)

Late guidelines

The rules should be clear well ahead of the opening and the deadlines. (Pre-proposal applicant, not shortlisted)

Rather late guidelines in particular relating to the heading of SFBs. (Pre-proposal applicant, not shortlisted)

Complicated rules/co-funding requirements

Much too complicated rules, in particularly for costs. This costs only a lot of time of researchers, instead of actually conducting research work. Just think about the resources lost due to it. (Pre-proposal applicant, shortlisted)

Financial structure (recent/fresh money, 40% Eigenleistung) is unusual, and requires thinking about the enterprise in a different logic from all other applications for project-funding (except, perhaps, ERC Synergy Grants). (Pre-proposal applicant, shortlisted)

Individual review time and efforts about the same as for other schemes. Most of the reviewers replied that the difficulty of reviewing the Cluster of Excellence proposals were about the same as for proposals they had reviewed for other funding schemes (75% the same, 8% less difficult, 16% more difficult). It also took about the same time (79% replied same time, 2% less time, 20% more time, Figure 4.3). Some of those indicating that CoE proposals were more demanding and/or time-consuming, explained this in free text pointing to the size and complexity of the

cluster proposals. It was also said that the short deadlines made it stressful and the large amount of funding demanded extra careful review. Others held that when comparing with multidisciplinary proposals as basis for the comparison, the FWF CoE scheme efforts were in the same range (Textbox 4.2).

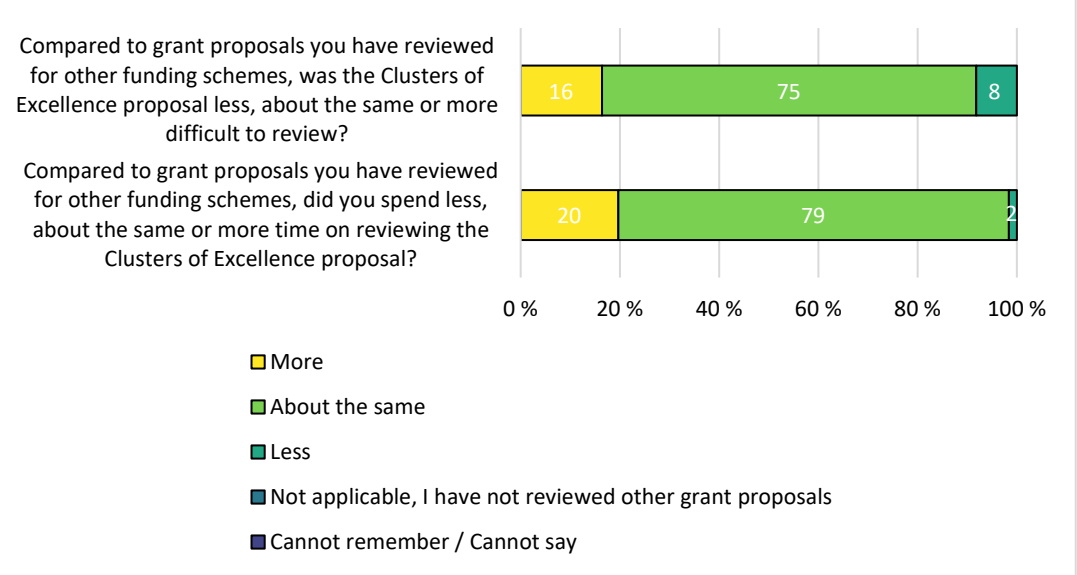

Figure 4.3 Difficulty of review and time needed compared to reviewing of other grant proposals.

Source: NIFU CoE reviewer survey N=61.

Textbox 4.2 Difficulty of review and time needed – Reviewer free text replies (Q13)

More time and effort

The sheer scale of a CoE means that this evaluation did take longer than any other I have undertaken.

It was a large project with many associated sub-projects, so I spent more time than I would normally for a single proposal.

It's more demanding, because a Cluster of Excellence has a number of components and the research aims are more open-ended than those in a single-topic research proposal.

The application was very large, a large amount of information, many pages + the text was unclear [and demanded thorough reading].

Getting through curriculum from the all the applicants was relatively long

As for other multidisciplinary proposals

the review of individual applications is certainly less time-consuming. Compared to other multidisciplinary applications, the effort remains in the same range.

Extra stress or care
The time given to review the proposal was very short and it was stressful.

Given the scope of the proposal and also the considerable amount of funding money involved, I have had to be extra careful reading the proposal and also while preparing my review. As such this is nothing negative though.

Institutional leaders dissatisfied with the guidelines and requirements. Whereas the restriction of proposals per institution appears uncontroversial and no stakeholders expressed concerns about this, interviews with representatives from the host organisations indicated considerable frustration and discontent with the clarity of the guidelines and the requirements for a 40% co-funding of the cluster. Most of the critique pertains to the co-funding and the quest for 'fresh money and recent hires' as in-kind contribution. Although the requirements for co-funding were concrete, much energy and resources have been spent to interpret what this may entail and what may be counted as in-kind. This has been challenging processes, especially for the administrative staff. Illustrative of this one leader said that the institution had a different interpretation of the budgetary issues compared to another institution, but they thought and hoped they had the best interpretation.

Another issue addressed in the interviews was the timing of the call. The public universities had recently concluded their discussions with the ministry on the performance agreements which set the work programme and the budget for the next three years. Thus, the CoE-process was out of tune with the ministry – as one informant claimed. Some also argued that it was signalled that the ministry may provide some additional funding for the CoEs, but this did not happen.

Despite the relatively strong and harsh critique of the requirements for the co-funding, the interviewed leaders acknowledge that this was the first call, and they expected that especially questions on in-kind and co-funding will be handled differently in the next call. Some also meant that the co-funding should be reduced to 20%. This will still give commitment from the host organisations – they argued – but it would reduce potential internal tensions. Notably, policy stakeholders did not see problems regarding the co-funding, they saw such contributions as a natural follow up of the institutions' internal prioritisations.

4.4 Conclusions

Satisfaction with requirements and programme policies, except co-funding requirements

The surveys indicate that both applicants and reviewers see the CoE programme to be adequate for achieving its aims. A majority see programme policies as

appropriate for creating synergies between research environments and for establishing long-term leading research fields. Regarding programme terms, the applicants are particularly satisfied with the amount of funding and impact on prestige and career of awarded researchers. A major concern was the requirements for co-funding from the host institutions, which was considered too high (40%) and budgeting requirements not sufficiently clear.

General satisfaction with programme implementation, management and costs

Overall, stakeholders appear satisfied with programme management and costs. There were some concerns with late information to applicants, i.e. late clarification on programme terms for this first CoE call. Moreover, there was a major concern regarding timelines for proposals that implied that important work needed to be done during vacations. On the positive side, applicants were comparatively well satisfied with the support from the FWF during the application process, and individual reviewer time was about the same as for other funding schemes.

Comparatively good on transparency and impartiality

When comparing with results from surveys on other funding schemes, the FWF CoE come out good on transparency of the selection process. Overall, applicants appear satisfied with the clarity of terms and requirements and the transparency of the selection process. Still, we see that some of the applicants call for earlier information on the review criteria and process, clearer feedback on the pre-proposals and more transparency of decisions on pre-proposals. Moreover, one third of applicants report that their general confidence in the selection process is lower than for other funding sources. The FWF CoE scheme still comes out better than the Swiss NCCR scheme on applicants' views on the impartially of the assessments of their proposals.

5 Conclusions and recommendations

In this chapter, we conclude on the specific topics to be evaluated and provide recommendations to the FWF for its next call for Clusters of Excellence.

5.1 Overall answers to the evaluation questions

5.1.1 Outreach and preparation of proposals

Roles of the host organisations in pre-selecting and supporting proposals. Host organisations generally followed a bottom-up process and interested researchers were invited to submit an internal abstract/proposal. In some small institutions the selection of applicants seemed rather straight-forward – it appeared evident early which groups had the capacity to apply and propensity to compete in an international evaluation. Large institutions applied more formal selection criteria including amongst other the groups' degree of third-party funding and scientific impact. Both large and small institutions had dialogue and meetings with potential applicants, and the general impression is that selecting which proposal to lead was rather tension-free. Interviews with policy stakeholders also confirmed the impression that the scheme echoed most universities' established profiles, strengths and priorities. Support from the host organisation in developing the proposals varied. Some relieved Pis from all other obligations while others mainly provided administrative support.

Support in grant preparation from the FWF: Applicants were generally satisfied with support from the FWF in the grant preparation phase. There were some concerns that the guidelines for this first call for CoEs came late, earlier information about proposal requirements would be helpful in preparing proposals, but applicants appear generally satisfied with the information and support in preparing the pre-proposals, and most gave the FWF good scores on information events and consultation services.

Quality of the proposals: The call for Clusters of Excellence attracted well-qualified teams and proposals, and the large majority of proposals obtained high/top grades from the external reviewers, i.e. they were assessed to be excellent or very good. Especially the grades on the research team and the environment were high and the individual reviewer grades were in concurrence. The limitation of number of (lead) proposals per institution, and the limited Number of proposals

submitted, are probably part of the explanation of the general high quality of the proposals.

Proposal portfolio and potential biases: The call seems to have matched well/been attractive to the natural sciences and multidisciplinary fields. A large part of the proposals came from the natural sciences (54% of pre-proposals and 64% of full proposals), and many proposals combined multiple domains of science. We find no selection bias against multidisciplinary proposals at the pre-proposal stage. There was a low proportion of female directors in the proposed clusters, but at the pre-proposal stage these did relatively well (11% female directors in pre-proposals and 18% in full proposals), the proportion of female members of the boards of directors was relatively high (37% in both pre-proposals and full proposals). Moreover, comparing with the first proposal stage of the SFB scheme, the CoEs selection process appear more promising for gender diversity. Furthermore, the geographical and institutional diversity of clusters invited to the full proposal stage is greater than could be expected, i.e. compared to the FWF's overall funding profile.

5.1.2 Review and selection process – Pre-proposals

Ease and difficulty in finding reviewers and jury members: Efforts needed to find expert reviewers and jury members were moderate, but with considerable variation. For recruiting the expert reviewers, efforts varied between the proposals, and for recruiting the jury members it varied between fields of research. On average, the needed number of reviewer invitations per submitted review was lower than seen for a similar scheme in Switzerland. Still, for some proposals a high number of invitations (up to 41) had to be sent to get the requisite four reviews for each pre-proposal. For the recruitment to the pre-proposal jury, an average of three persons were asked per recruited jury member. Yet, for one field 10 persons had to be asked.

Composition of the jury, applicants' perspectives: The pre-proposal jury consisted of 15 members covering separate research fields and a chair. In general, the applicants were satisfied with the competence of the experts reviewing their pre-proposals – far more of them used the upper than the lower part of the rating scale. In our survey, applicants were not asked specifically about the competencies of the jury and the external expert reviews, but as the external reviews were anonymous (their expertise could only be judged by the content of the reviews), we expect the replies on reviewer competence to also reflect their views on the jury. Even when we conclude that applicants overall were reasonably well satisfied with the composition of the jury, we also note that that some of them expressed substantial critique of the jury composition – holding that the jury lacked expertise

in their field and that the result of the pre-proposal round reflected what expertise was represented and not represented in the jury.

Objectivity and quality of the reviews as experienced by the applicants: Most applicants were reasonably satisfied with the thoroughness of the reviews of their pre-proposal, and the reviewers' ability to assess all fields of research involved in their proposals; far more applicants used the upper than the lower part of the rating scale when replying to these questions. Also, regarding the impartiality of the assessment of their proposals far more were positive than negative. Those who did not make it to the next stage were less satisfied. Still, compared to similar survey data on other funding schemes, the CoE selection process comes out reasonably well on these objectivity and quality aspects of the reviews. It should be noted that some of the host organisations were rather sceptical towards the neat geographical and institutional distribution of clusters on the shortlist of full proposals, as it appeared to them as a result of a political decision and not only based on the quality of the proposals. Conversely, after the final selection, others reacted against the high number of clusters led from Vienna, which was feared to further increase the centralisation of Austrian science.

Quality and usefulness of different materials provided to the jury: The pre-proposal jury's work was based on reading the proposals and four individual review reports per proposal, guidelines for the review, and overviews and summaries of the individual reviews provided by the FWF. Whereas there was high agreement between the external reviewers on a large part of the proposals, the jury found that the quality of the individual review reports varied – some did not give sufficient details and argument for their conclusions, or the reviewers had not properly understood the terms and requirements for the pre-proposals. Apparent misunderstandings and inconsistencies were also noted in comments from the FWF administration in the overview documents on the reviews provided to the jury. The jury appeared well satisfied with the organisation of the review and the support and overview documents from the FWF.

Appropriateness of decision-making procedures: In order to handle conflicts of interest in the FWF, the organisation of the expert reviews/selection of experts was outsourced to ESF-Science Connect, the information provided to the FWF Board was limited, and the Board's involvement in the selection process was restricted to approving the shortlist suggested by the international jury. While this was essential in order to avoid conflicts of interest and for the legitimacy of review procedures and decisions, it also created some unclarities and frustrations. On the positive side, ESF-Science Connect was able to provide four reviews for each pre-proposal, on time, written by senior scholars with extensive review experience. The jury was well informed and considered they had good basis for putting together a shortlist of proposal to be invited to the next stage of the selection

process. Moreover, the applicants gave the selection process relatively good scores on impartiality and reviewer competence. On the negative side, we see some dissatisfaction among applicants with transparency of decisions on pre-proposals, and with clarity of feedback to applicants, and some were discontent with the quality of reviews. Not all individual expert reviewers understood the review and proposal requirements. They might have had a better understanding of this if they had had the possibility of direct contact with and guidance from the FWF during their review work. Moreover, the role of the FWF Board in the decision-making was unclear. To some it was unclear whether the jury or the Board was responsible for decisions, and some Board members found it hard to approve the shortlist without access to proposals and review details.

5.1.3 Review and selection process – Full proposals

Applicants' perceptions of the hearings. The last phase of the selection process included hearings with the 11 full proposal teams. The applicants' views on the hearings were mixed. On the one side it was stated that the hearings were good and the jury professional, on the other that the jury's questions were irrelevant and the jury lacked the expertise that applicants considered necessary to assess their proposal. The roles and tasks of the jury members were not strictly defined (giving room for making use of their multiple competencies), which gave some arbitrariness in terms of different focus for the assessment of each proposal: for some proposals the research was discussed by multiple jury members in the hearings, for other proposals mainly other aspects than the research, were discussed. While the applicants had been asked to present all units of the proposal, including how the training and communication units were to go beyond existing activities at their institutions, one plea from applicants was for the hearings to be more focused on the proposed research. Moreover, it was suggested that the individual review reports be distributed to the applicants in advance to facilitate such focus.

Information sharing and transparency. Generally, the selection procedures and criteria were well defined and the jury members very satisfied with the information and facilitation from the FWF. We still see some suboptimal information acquisition among jury members, and the FWF could have communicated key conditions for the full proposals (that the research team was fixed in the pre-proposal round) and that applicants did not have access to the review reports, more clearly to the jury before the hearings. Moreover, there was information asymmetry between jury members who had served on the pre-proposal jury and those new to the full proposal jury. The latter did not have information on the pre-proposal reviews, and therefore had less basis for interpreting the externals review reports and grades.

Appropriateness of selection procedures. The jury's conclusions appear straightforward and well justified. They were based on the quality of the research and the research teams, and complied with the expert assessments. The secondary criteria – training, communication and management – did not come into play when concluding the list of proposals recommended for funding. Moreover, there was high consistency between the two rounds of expert reviews (with one exception, the same proposals received the best grades in both rounds). For the last stage of the selection process, the approval in the FWF Board, it seems the Board's (minor) role was better understood and clarified than it had been at the pre-proposal stage. The FWF Board was also provided with more information on the assessments, and was less frustrated – than at the pre-proposal stage – about being formally responsible but not fully informed. There are still obvious challenges in organising fair review of proposals across all different areas of research. Some more information sharing in the jury about the specific competences of external reviewers and jury members, and more structured jury hearings and calibration of assessments may increase transparency and accountability, in the sense that structured procedures are easier to document (e.g. in terms of which competences are involved at what stage).

Concerns about multidisciplinary research. None of the broadly multidisciplinary proposals were among the five with the best overall average grades from the expert reviewers, and none of them were funded. Disadvantage for multidisciplinary and interdisciplinary research is a well-known phenomenon in grant review, and was also a concern among interviewed stakeholders. It appears that the chosen selection procedure was not appropriate for endorsing broadly multidisciplinary or interdisciplinary research. Som stakeholders also referred to the new 'Emerging Fields'-call as a more appropriate scheme for multidisciplinary and interdisciplinary proposals.

5.1.4 CoE programme design and management

Satisfaction with requirements and programme policies: A majority of both applicants and reviewers consider the CoE programme to be adequate for achieving its aims. They find programme policies appropriate for creating synergies between research environments and for establishing long-term leading research fields. They were also satisfied with programme terms, particularly with the amount of funding and impact on prestige and career of awarded researchers. However, a major concern among applicants and host institutions was the requirements for co-funding from the host institutions, which was considered too high (40%) and budgeting requirements were not sufficiently clear. Policy stakeholders saw,

however, no problems regarding the co-funding and considered this as a natural follow up of internal prioritisations.

Programme implementation and timeline: Overall, stakeholders appear well satisfied with programme management. There were some concerns with the timeline and late clarification on programme terms for this first CoE call. A major concern was proposal deadlines that implied that much of the work with proposals needed to be done during vacations. Moreover, some felt being part of a 'test-round' in which terms and requirements were not fully clear in advance, were communicated late or not fully understood, and this caused extra work and effort for applicants when preparing the proposals. Again, the requirements for co-funding were a particular concern.

Cost and efficiency of the selection process: The cost and efficiency of the first phase of the selection process seem generally adequate. Most applicants rated time and efforts needed to prepare a pre-proposal positive or neutral. And while a substantial part of them considered the time and efficiency in the application and selection process to be poorer than for their other relevant funding sources, the majority rated it the same or better than the alternatives. Moreover, most of the individual reviewers reported that they spent about the same on the review as they did for reviewing other proposals. The major concerns expressed on cost and efficiency, were those explained above – timing of deadlines and clarity of requirements.

Evaluation of the selection criteria: The applicants were generally satisfied with review criteria, but there were some concerns with their clarity and adequacy. Survey replies indicate that applicants and reviewers agree on what should be the most important review criteria. From both groups it was expressed that gender was not or should not be a main criterion. The criteria's relative importance and weighting, though, did not seem clear to applicants. Some stated that the criteria were not clearly communicated or that they were inconsistently applied, while a few suggested additional criteria. Overall, the criteria appear adequate, but applicants need more/clearer information on how they are applied.

5.2 Recommendations for the 2nd Clusters of Excellence call

Even though stakeholders were overall satisfied, and procedures adequate and efficient, our analyses also point to challenges in the selection process:

- Balance between number and size of proposals and grants
- Clear and simple requirements and guidelines for proposals
- Timing of the call and deadlines and timely information
- Transparency of the proposal review process
- Guiding external reviewers and ensuring consistent use of criteria

- Organising assessments in a multidisciplinary jury
- Disadvantages for interdisciplinarity research when competing against disciplinary research
- Defining the proper role for the FWF Board – given extensive conflicts of interest

In this section we address these challenges and provide recommendations for the next call for proposals.

Terms and requirements

- *Balance between number and size of proposals and grants*. A key question in designing a funding instrument for a small number of Clusters of Excellence is how to avoid that disproportionally many resources are spent on preparing and evaluating proposals. We recommend that the FWF continue to restrict the number of proposals per institution, and by this limit the number of unsuccessful proposals. It may also be considered to further restrict the number of full proposals, and to simplify full proposal requirements.
- *Clear and simple requirements and guidelines for proposals*. For revising requirements and guidelines for the next call, stakeholders voice two points for improvement. First, rules for how to fulfil the co-funding and in-kind requirements should be clear and simple to operationalise/calculate, and formulated to fit different kinds of research organisations. Second, to avoid misunderstandings and unnecessary work, the purpose of including 'Description of the additional COE units' in the pre-proposal should be made clearer to applicants and reviewers. As far as these units are not assessed at the pre-proposal stage, this should be made clear to applicants and the required content of these sections in the pre-proposal should be kept to a minimum.
- *Timing of calls and deadlines and timely information.* To provide applicants with sufficient time for preparing proposals, and ease communication within the teams and between host organisations, the timeline for calls and deadlines should ensure that this can be done outside of vacation seasons. Proposal requirements, review criteria and the selection process for all stages should be clear in advance and published along with call for Letters of Intent.
- *Clarify interdisciplinary aims.* Broadly multidisciplinary proposals were disadvantaged by competing against disciplinary research at the final stage of the selection process. The FWF should clarify whether the CoE programme is to promote interdisciplinary clusters. If the programme is intended to promote interdisciplinary research, interdisciplinarity should be

part of the review criteria, and the selection process should be adapted to endorse interdisciplinary clusters.

The pre-proposal reviews

- *Transparency of the pre-proposal review process.* Some applicants thought the pre-proposal jury had insufficient expertise, or they were concerned about a mismatch between reviews and decisions, and some stakeholders believed that policy/dispersal criteria had been involved when putting together the shortlist of proposals to be invited to the full proposals stage. To avoid such misperceptions, more transparency is needed. The tasks and expected competencies of the individual reviewers and the jury members respectively should be communicated more clearly to applicants. Likewise, the criteria applied by the jury and the limited role of the FWF Board need to be better communicated to stakeholders. To further increase transparency and the bases for the jury's assessments, the FWF should also consider allowing rebuttals from applicants on pre-proposal reviews.
- *Guiding external reviewers and ensuring competent review and consistent use of criteria.* To ensure that the individual expert reviewers understand the context of their review work – the CoE programme and the pre-proposal stage and requirements – they need good guidance. Whereas the selection of reviewers and organisation of the review seem well handled by ESF-Science Connect, involving the FWF more in the guidance of reviewers would be helpful, e.g. with a webinar organised by the FWF and/or providing the reviewers with a FWF helpline/FWF contact person. Moreover, proposals with potentially scant reviewer expertise should be given special attention in the jury. Such proposals can be identified by asking the individual expert reviewers to rate their own expertise in the different fields of the proposal, as well as to forward information about proposals for which it was difficult to find expert reviewers.

The shortlist of pre-proposals

- *Organising assessments in a multidisciplinary jury.* There is no obvious best way to organise the assessment of proposals in a multidisciplinary review panel. The proposals may be very specialised and at the same time span multiple domains of science. And while a broad panel may cover all domains of science, it is difficult to find a fair way of comparing proposals from different domains of science. The FWF divided the jury into three broad subpanels and at the same time ensured reading and discussions across the subpanels. This appears to have worked well. To further ensure inclusion of a broad set of expertise for the assessment and discussion of

each proposal, and at the same time limit the need to assess across domains of science, the FWF may consider requiring jury members to read all proposals (key sections) and expert reviews in their subpanel, and then prepare assessments for the parts of the proposals they can understand. Reading, assessments and discussions across the subpanels should be organised in parallel as it was in the first call. The time for a plenary jury meeting may be adjusted/reduced to the number of pre-proposals needing a plenary discussion – i.e. the main task would be to adjust grades and conclusions for mid-rage and non-concluded proposals.

- *Defining the proper role for the FWF Board – given extensive conflicts of interest.* The role of the FWF Board in the FWF selection process should be more clearly defined. Given the conflicts of interest in the FWF Board, its effective role is more realistically defined as approving the work and procedures of the jury, rather than assessing the content of the shortlist or have the possibility to make adjustments to it. To enable the FWF Board to take responsibility for approving the procedure, the FWF may consider providing a subcommittee (Board members without conflicts of interest) with information on the review and selection process, a subcommittee which may subsequently present their conclusions to the Board (for the Board to take the formal decision), or the formal decision may be delegated to the subcommittee. Moreover, the Board's alternative to approving of the shortlist should be clarified, e.g. a possibility to send it back to the jury for explanation or ask for new assessments if procedural errors are detected.

Final stage: selecting the CoEs to be funded

- *Enhance transparency and accountability in jury assessments and hearings.* Organising fair assessments in a multidisciplinary jury is challenging. At the full proposal stage, the jury assessments were less structured than at the pre-proposal stage, and there was information asymmetry in the jury. To enhance accountability and rigor, we recommend that the jury members with the expertise closest to a proposal jointly review the external reviews, define questions for the hearings and have the main say in its assessment. To reduce information asymmetry (in a jury with both new members and members from the preproposal stage), all jury members should be given access also to the pre-proposal reviews. Furthermore, using the same grading scale throughout the selection process would ease the interpretation of the reviewer grades.
- *Give applicants access to the review reports in advance of the hearings.* Information asymmetry between the applicants and the jury should be reduced. By giving applicants access to the reports from the external

reviewers in advance of the hearings, they will have better opportunities for preparing for the hearings, and the hearings can more easily address the comments and concerns of the expert reviewers. Alternatively, the applicants may be given the opportunity for (max 1 page) written rebuttals to the external reviews in advance of the hearings.

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Appendix 1 Tables

Table A1 Adequacy of the review criteria: Reviewers opinions. Percentages and means.

Question7: Adequacy of the review criteria: The FWF asked the reviewers to assess the proposals on the following criteria. For each of them, please indicate whether you think it is an appropriate criterion for assessing these proposals.	1 = Not at all	2	3	4	5 = To a great extent	Cannot say	N	Mean score	Mean score Women	Mean score Men
a) The quality of the research programme, in particular in an international context	0.0	1.7	0.0	16.7	81.7	0.0	60	4.8	4.7	4.9
b) The programme's potential for innovation	0.0	1.7	8.3	35.0	55.0	0.0	60	4.4	4.3	4.6
c) The coherence of and added value generated by the proposed research programme	0.0	3.3	6.7	28.3	61.7	0.0	60	4.5	4.4	4.6
d) The programme's potential for generating significant synergies between the researchers involved	0.0	1.7	13.3	30.0	55.0	0.0	60	4.4	4.4	4.4
e) gender- and sex-related components of the research question and the approaches chosen	5.0	10.0	36.7	23.3	21.7	3.3	60	3.5	3.6	3.4
f) the research programme's ethics-related components	0.0	5.1	23.7	33.9	33.9	3.4	59	4.0	4.1	3.9
g) The composition of the team and how suitable it is for meeting the research programme's goals	0.0	1.7	5.0	18.3	75.0	0.0	60	4.7	4.7	4.7
h) The composition of the team with respect to gender and diversity (such as the range of career stages represented in the team)	1.7	11.7	26.7	25.0	33.3	1.7	60	3.8	3.8	3.8
i) Quality of the individual researchers' previous work and their potential for making a significant contribution to the proposed research	0.0	1.7	6.7	28.3	61.7	1.7	60	4.5	4.5	4.6
j) The quality and appropriateness of the research environment available to the CoE	0.0	1.7	6.7	43.3	46.7	1.7	60	4.4	4.3	4.5
k) Anticipated synergies between the institutions involved	0.0	1.7	6.7	48.3	43.3	0.0	60	4.3	4.3	4.3

Source: NIFU Reviewer survey, FWF CoE 2022.

Table A2 Comprehensibility of criteria and ability to assess the Clusters of Excellence proposal. Reviewers' opinions. Percentages and means.

Question 9. Comprehensibility of criteria and ability to assess the Clusters of Excellence proposal. Please indicate to what extent you agree with the statements below.	1 = Not at all	2	3	4	5 = To a great extent	Cannot remember/Cannot say	N	mean Total
a) The review criteria were clear and easy to understand	0.0	0.0	6.6	27.9	65.6	0	61	4.6
b) The review guidelines provided by the FWF were clear and easy to understand	0.0	1.6	4.9	26.2	67.2	0	61	4.6
c) The proposal I reviewed was close to my field of expertise	0.0	0.0	4.9	31.2	63.9	0	61	4.6
d) I was able to assess the research programme in the proposal assigned to me	0.0	0.0	0.0	21.3	78.7	0	61	4.8
e) I was able to assess the team of researchers in the proposal assigned to me	0.0	0.0	1.6	21.3	77.1	0	61	4.8
f) I was able to assess the research environment in the proposal assigned to me	1.6	0.0	4.9	32.8	60.7	0	61	4.5
g) I was able to give an overall assessment of the proposal assigned to me	0.0	1.7	0.0	16.7	81.7	0	60	4.8

Source: NIFU Reviewer survey, FWF CoE 2022.

Table A3 FWF Cluster of Excellence scheme compared with other relevant funding concerning, applicants' views, by success of pre-proposal. Percentages.

Question 8. When comparing to your other relevant funding sources, is the FWF Cluster of Excellence scheme poorer, about the same or better, concerning:	Only pre-proposal					Invited full proposal				
	Poorer	About the same	Better	Cannot say	N	Poorer	About the same	Better	Cannot say	N
b. The transparency of the selection process	37.3 %	52.2 %	6.0 %	4.5 %	67	12.2 %	56.1 %	17.1 %	14.6 %	41
c. The handling of intellectual property and confidential information	4.5 %	54.5 %	1.5 %	39.4 %	66	2.4 %	36.6 %	0.0 %	61.0 %	41
d. The impartiality and ethical standard of the selection process	15.2 %	65.2 %	3.0 %	16.7 %	66	0.0 %	47.6 %	2.4 %	50.0 %	42
e. Your general confidence in the selection process	43.3 %	52.2 %	1.5 %	3.0 %	67	16.7 %	59.5 %	19.0 %	4.8 %	42

Source: NIFU Applicant survey, FWF CoE 2022.

Table A4 Cluster of Excellence full proposals, average grades* by criteria and result, means.

Review criteria	Not funded	Funded	Total
Research	2,29	1,45	1,91
Team	2,08	1,25	1,70
Training	1,92	1,45	1,70
Communication and transfer	2,00	1,55	1,80
Management	1,92	1,65	1,80
Overall Assessment	2,13	1,45	1,82
N Full proposals	**6**	**5**	**11**

Source: Data from the FWF.

** The full proposals were rated on a scale from Outstanding (1) to Poor (6) by four reviewers individually.*

Table A5 Cluster of Excellence full proposals, average grades by criteria and multi-disciplinarity, and variance in overall grades.

	Broad multidisciplinarity (pre-proposal assigned to two subpanels)		
	No	**Yes**	**Total**
Average grades by criteria*			
Research	1,71	2,25	1,91
Team	1,46	2,13	1,70
Training	1,71	1,69	1,70
Communication	1,71	1,94	1,80
Management	1,75	1,88	1,80
Overall assessment	1,64	2,13	1,82
*Variance in Overall grades**			
< 0.5	71,4 %	0,0 %	45,5 %
0.5-1.5	28,6 %	75,0 %	45,5 %
> 1.5	0,0 %	25,0 %	9,1 %
N Full proposals	7	4	11
% Funded	71%	0%	45%

Source: Data from the FWF.

** The full proposals were rated on a scale from Outstanding (1) to Poor (6) by four reviewers individually.*

Appendix 2 Overview interviewees

Name	(Main) Role	Institution
Barbara Abraham	Applicant organisation	ISTA
Barbara Leitner	Applicant organisation	University of Vienna
Joachim Reidl	Applicant organisation	University of Graz
Martina Merz	Applicant organisation	University of Klagenfurt
Nicola Hüsing	Applicant organisation	University of Salzburg
Zsuzsanna Gabor	Applicant organisation	Central European University
Ulrike Diebold	Applicant organisation	Austrian Academy of Sciences
Heinz Fassmann	Applicant organisation	Austrian Academy of Sciences
Ana Sokolova	FWF Board	University of Salzburg
Claudia Kraft	FWF Board	University of Vienna
Ludger Hengst	FWF Board	Medical University of Innsbruck
Michael Drmota	FWF Board	Vienna University of Technology
Paul Schweinzer	FWF Board	University of Klagenfurt
Ruth Prassl	FWF Board	Medical University of Graz
Anne Ingeborg Myhr	Pre and full proposal jury	
Anne-Marie Kermarrec	Full proposal jury	
Annette Hill	Pre and full proposal jury	
Kenneth Ruud	Pre and full proposal jury	
Stephen Curry	Pre and full proposal jury	
Daniela Pilgrab	Policy	Austrian Federal Ministry of Education, Science and Research
David Müller	Policy	Austrian Federal Ministry of Education, Science and Research
Paul Preuer	Policy	Austrian Federal Ministry of Education, Science and Research
Sandra Mukherjee-Cosmidis	Policy	Austrian Federal Ministry of Education, Science and Research
anonymous	Applicant, full proposal	
anonymous	Applicant, full proposal	

Appendix 3 Questionnaire to applicants

The Cluster of Excellence selection process: Survey to applicants

The purpose of this survey is to gain insight into the applicants' views and experiences with the Cluster of Excellence application and selection process. The experiences of all applicants are of great value to the improvements of the selection process and we kindly ask you to participate.

A. Forming the consortium and support from your home institution

1. What was the basis for the consortium you formed for the Cluster of Excellence proposal? (multiple replies possible)

(1) ❑ Previous research collaboration among the consortium members
(2) ❑ Previous research collaboration among researchers at my institution
(3) ❑ New research collaboration among the consortium members
(4) ❑ New research collaboration among researchers at my institution
(99) ❑ Other: _____

2. Apart from you and your group, who was involved in deciding whether or not the proposal was to be developed and submitted (to the FWF)? (multiple replies possible)

(1) ❑ The top leadership of my institution
(2) ❑ The top leadership of the collaborating institutions
(3) ❑ Leadership at my faculty/school/similar level
(4) ❑ Leadership at partners' faculty/school/similar level
(5) ❑ Leadership at my department/similar unit
(6) ❑ Leadership at partners' department/similar unit
(99) ❑ Other: _____

3. How would you describe the pre-selection of Cluster of Excellence proposals at your home institution?

(1) ❍ No pre-selection: All formally eligible applicants were allowed to submit a proposal
(2) ❍ Informal pre-selection process: Which proposals to submit were discussed and decided in informal meetings/settings
(3) ❍ Formal pre-selection process: There was a defined procedure for deciding which proposals to submit
(99) ❍ Other: _____

4. My home institution supported my consortium's proposal by:
(multiple replies possible)

(1) ❑ Dedicating funding/time to develop the proposal
(2) ❑ Contributing with administrative support
(3) ❑ Help in forming the consortium
(4) ❑ Organising internal review(s) of the proposal
(99) ❑ Other (fill in below): _____

5. Please describe briefly how Cluster of Excellence proposals were supported and selected at your institution:

_____
_____
_____
_____
_____
_____

B. Your experiences of the Cluster of Excellence application and selection process

6. Considering your Cluster of Excellence application, to what extent did you find the following issues/processes satisfactory?

	5 = To a great extent	4	3	2	1 = Not at all	Cannot say

a. The clarity of the terms and requirements for Letters of Intent (Call documents)	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
b. The clarity of the terms and requirements for pre-proposals (Call documents)	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
c. The support from the FWF in preparing proposals (e.g. information events, consultation services)	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
d. The support from your home institution in preparing proposals (information events, coaching, consultation services)	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
e. The competence of the experts reviewing the pre-proposals	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
f. The transparency regarding decisions on the pre-proposals round	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
g. The clearity and the completedness of the feedback to applicants (on the pre-proposals)	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
h. The time and efforts needed to prepare a Letter of Intent	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
i. The time and efforts needed to prepare a pre-proposal	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
j. The time from submitting the pre-proposal to the result of the pre-proposal round was announced	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

7. To what degree do you think the reviewers who assessed your pre-proposal:

	5 = To a great extent	4	3	2	1 = Not at all	Cannot say
a. Were able to assess all fields of research involved in the application?	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
b. Provided an impartial and unbiased assessment of your application?	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
c. Provided a thorough assessment of your application?	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

8. When comparing to your other relevant funding sources, is the FWF Cluster of Excellence scheme poorer, about the same or better, concerning:

	Better	About the same	Poorer	Cannot say
a. Reviewer competence	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
b. The transparency of the selection process	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
c. The handling of intellectual property and confidential information	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
d. The impartiality and ethical standard of the selection process	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
e. Your general confidence in the selection process	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
f. Time and efficiency of the application and selection process	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
g. Impact on the prestige and career of the awarded investigators/researchers	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
h. Amount of funding	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
i. Flexibility of use of funds	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
j. Support for young scientists	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

9. Selection criteria: The pre-proposals were assessed by their research programme, team of researchers and research environment. Scroll down to see full list of criteria. To what extent do you think these were appropriate criteria to assess your proposal?

	5 = To a great extent	4	3	2	1 = Not at all	Cannot say
a. Adequate criteria for research programme	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
b. Adequate criteria for team of researchers	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
c. Adequate criteria for research environment	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

Criteria for review of the CoE pre-proposals

a. The research proposal

- The quality of the research programme, in particular in an international context
- The programme's potential for innovation
- The coherence of and added value generated by the proposed research programme
- The programme's potential for generating significant synergies between the researchers involved
- To what extent and how suitably have the applicants addressed:
    - gender- and sex-related components of the research question and approaches chosen
    - the research programme's ethics-related components

b. The team of researchers

- The composition of the team and how suitable it is for meeting the research programme's goals
- The composition of the team with respect to gender and diversity (such as the range of career stages represented in the team)
- Quality of the individual researchers' previous work and their potential for making a significant contribution to the proposed research

c. The research environment

- The quality and appropriateness of the research environment available to the CoE
- Anticipated synergies between the institutions involved

10. Please explain any concerns with the adequacy or clarity of the criteria

_____
_____
_____
_____
_____
_____

11. In your opinion, to what degree does the Cluster of Excellence scheme provide the appropriate policies and review process to:

	5 = To a great extent	4	3	2	1 = Not at all	Cannot say
a. Establish long-term, internationally leading research fields in Austria?	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
b. Enable achievements that could not be reached by individual research units (creating synergies between research environments)	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

C. Open comments/Free text

12. Below you may enter comments and experiences concerning the Cluster of Excellence application and selection process. Of particular interest are your ideas for improvement of the application and review process.

_____
_____
_____
_____
_____
_____

Thank you for participating in the FWF Cluster of Excellence applicant survey!

Appendix 4 Questionnaire to reviewers

Evaluation of the FWF Cluster of Excellence selection process: Survey to reviewers

This survey goes to all experts who reviewed pre-proposals for the first round of FWF Clusters of Excellence. The purpose is to learn about the experts' experiences with the review process and provide the FWF with recommendations on how to set up the review process for the next call for proposals. The experiences of reviewers in all fields of research are of great value to design an adequate selection process and we kindly ask you to participate.

Your background

1. Your grant review experience. Please indicate the approximate number of grant proposals you have reviewed in the last 10 years.

	0	1-5	6-20	Above 20
a) Grant proposals reviewed for the FWF (not including the Cluster of Excellence proposal)	(1) ❍	(2) ❍	(3) ❍	(4) ❍
b) Grant proposals reviewed for other funding agencies	(1) ❍	(2) ❍	(3) ❍	(4) ❍

2. Please indicate your current (main) position:
(1) ❍ Full professor/similar
(2) ❍ Associate professor/similar
(3) ❍ Lead Researcher/Head of Research/similar
(4) ❍ Assistant professor/similar
(5) ❍ Postdoctoral fellow/Researcher/similar
(6) ❍ PhD student
(7) ❍ Other position at a research/higher education institution
(8) ❍ Position not at a research and/or higher education institution. Please specify: _____
(9) ❍ On leave/retired/not working

3. Your age
(1) ❍ Below 30
(2) ❍ 30-39
(3) ❍ 40-49
(4) ❍ 50-59
(5) ❍ 60 or above

4. Gender
(0) ❍ Female
(1) ❍ Male
(99) ❍ Other/prefer not to say

5. Country in which you work (main affiliation, if on leave/retired/not working, last main affiliation):
[select from list]

6. Please select your (main) field of research from the dropdown list below.

The list contains 42 (OECD) categories, numbered as follows: 1 Natural sciences; 2 Engineering and technology; 3 Medical sciences; 4 Agricultural sciences; 5 Social sciences; 6 Humanities; 7 Others. If you do not find your field of research on the list, please select the closest category, or provide your field of research in the 'other field' textbox. The categories are explained at the OECD web pages: http://www.oecd.org/science/inno/38235147.pdf
(1) ❍ 1.1 Mathematics
(2) ❍ 1.2 Computer and information sciences
(3) ❍ 1.3 Physical sciences
(4) ❍ 1.4 Chemical sciences

(5) ❍ 1.5 Earth and related environmental sciences
(6) ❍ 1.6 Biological sciences
(7) ❍ 1.7 Other natural sciences
(8) ❍ 2.1 Civil engineering (including architecture engineering)
(9) ❍ 2.2 Electrical engineering, electronic engineering, information engineering
(10) ❍ 2.3 Mechanical engineering
(11) ❍ 2.4 Chemical engineering
(12) ❍ 2.5 Materials engineering
(13) ❍ 2.6 Medical engineering
(14) ❍ 2.7 Environmental engineering
(15) ❍ 2.8 Environmental biotechnology
(16) ❍ 2.9 Industrial Biotechnology
(17) ❍ 2.10 Nano-technology
(18) ❍ 2.11 Other engineering and technologies
(19) ❍ 3.1 Basic medicine
(20) ❍ 3.2 Clinical medicine
(21) ❍ 3.3 Health sciences
(22) ❍ 3.4 Health biotechnology
(23) ❍ 3.5 Other medical sciences
(24) ❍ 4.1 Agriculture, forestry, and fisheries
(25) ❍ 4.2 Animal and dairy science
(26) ❍ 4.3 Veterinary science
(27) ❍ 4.4 Agricultural biotechnology
(28) ❍ 4.5 Other agricultural sciences
(29) ❍ 5.1 Psychology
(30) ❍ 5.2 Economics and business
(31) ❍ 5.3 Educational sciences
(32) ❍ 5.4 Sociology (including anthropology and demography)
(33) ❍ 5.5 Law
(34) ❍ 5.6 Political Science
(35) ❍ 5.7 Social and economic geography
(36) ❍ 5.8 Media and communications
(37) ❍ 5.7 Other social sciences
(38) ❍ 6.1 History and archaeology
(39) ❍ 6.2 Languages and literature
(40) ❍ 6.3 Philosophy, ethics and religion
(41) ❍ 6.4 Art (arts, history of arts, performing arts, music) (including architectural design)
(42) ❍ 6.5 Other humanities
(99) ❍ 7 Other (Please specify below)
Other field: _____

Your experiences with the Clusters of Excellence review criteria and process

7. **Adequacy of the review criteria:** The FWF asked the reviewers to assess the proposals on the following criteria. For each of them, please indicate whether you think it is an appropriate criterion for assessing these proposals.

Criteria related to the research proposal/programme

	5 = To a great extent	4	3	2	1 = Not at all	Cannot say
a) The quality of the research programme, in particular in an international context	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
b) The programme's potential for innovation	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

c) The coherence of and added value generated by the proposed research programme	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
d) The programme's potential for generating significant synergies between the researchers involved	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
e) gender- and sex-related components of the research question and the approaches chosen	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
f) the research programme's ethics-related components	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

Criteria related to the team of researchers

	5 = To a great extent	4	3	2	1 = Not at all	Cannot say
g) The composition of the team and how suitable it is for meeting the research programme's goals	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
h) The composition of the team with respect to gender and diversity (such as the range of career stages represented in the team)	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
i) Quality of the individual researchers' previous work and their potential for making a significant contribution to the proposed research	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

Criteria related to the research environment

	5 = To a great extent	4	3	2	1 = Not at all	Cannot say
j) The quality and appropriateness of the research environment available to the CoE	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
k) Anticipated synergies between the institutions involved	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

8. Please explain any concerns with the adequacy of the review criteria:

_____
_____
_____
_____
_____
_____

9. Comprehensibility of criteria and ability to assess the Clusters of Excellence proposal. Please indicate to what extent you agree with the statements below.

	5 = To a great extent	4	3	2	1 = Not at all	Cannot remember/Cannot say
a) The review criteria were clear and easy to understand	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
b) The review guidelines provided by the FWF were clear and easy to understand	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
c) The proposal I reviewed was close to my field of expertise	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
d) I was able to assess the research programme in the proposal assigned to me	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
e) I was able to assess the team of researchers in the proposal assigned to me	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
f) I was able to assess the research environment in the proposal assigned to me	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
g) I was able to give an overall assessment of the proposal assigned to me	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

10. Please explain any concerns with the comprehensibility of the criteria or the ability to assess the proposal:

_____
_____
_____
_____
_____

Difficulty of review and time needed compared to reviewing other grant proposals

11. Compared to grant proposals you have reviewed for other funding schemes, was the Clusters of Excellence proposal less, about the same or more difficult to review?

(1) ❍ Less difficult	(2) ❍ About the same	(3) ❍ More difficult	(9,999) ❍ Cannot remember / Cannot say	(99) ❍ Not applicable, I have not reviewed other grant proposals

12. Compared to grant proposals you have reviewed for other funding schemes, did you spend less, about the same or more time on reviewing the Clusters of Excellence proposal?

(1) ❍ Less time (2) ❍ About the same time (3) ❍ More time (9,999) ❍ Cannot remember / Cannot say (99) ❍ Not applicable, I have not reviewed other grant proposals

13. If difficulty or time spent differed from your review of proposals to other funding schemes, please indicate <u>why</u> in the comment box below (e.g. more/less demanding review criteria; longer/shorter project descriptions).

_____
_____
_____
_____
_____

Your overall assessments of the first round of FWF Clusters of Excellence

14. In your opinion, to what degree does the FWF Clusters of Excellence scheme provide the appropriate policies and review procedure to:

	5 = To a great extent	4	3	2	1 = Not at all	Cannot say
a) Establish long-term, internationally leading research fields in Austria?	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍
b) Enable achievements that could not be reached by individual research units (creating synergies between research environments)	(5) ❍	(4) ❍	(3) ❍	(2) ❍	(1) ❍	(9,999) ❍

Final comments

15. If you have any further comments regarding your experiences with evaluating Clusters of Excellence proposal for the FWF, or any of your replies above, please use the space below.

_____
_____
_____
_____
_____

Thank you for participating in the FWF Clusters of Excellence reviewer Survey!

Appendix 5 Response analysis for the surveys

FWF CoE – Surveys response analysis

1 About the surveys

In 2022/2023 NIFU evaluates the multistep review and selection process of the Clusters of Excellence (CoE) programme on behalf of the Austrian Science Fund FWF. To give input on the preproposal stage of the selection, (1) reviewers replied to a survey after they had submitted their reviews of the preproposals, and (2) applicants replied to a survey after they had received their reviews and decision on their preproposal.

For both surveys all questions, the invitation to the surveys and the reminders were all in English. Most questions in both surveys were multiple choice, but they also included some open-ended questions. The applicants survey consisted of 12 questions while the reviewer survey consisted of 15 questions.

2 Anonymity, data protection and NSD

The project was registered at the Norwegian Centre for Science and Research Data (NSD) which is a part of Norwegian Agency for Shared Services in Education and Research (Sikt), with the following project title: "Evaluation of the FWF Cluster of Excellence selection process" (reference number: 547866) and conducted in accordance with GDPR regulations on data protection.

In the invitation to participate in the surveys, the terms were explained to the respondents as follows:

> **FWF applicant survey:** By submitting the form, you give consent to participating in the study. Your replies will be matched with proposal and applicant data we have received from the FWF (field of research, outcome of the proposal, gender, type of home institution) and so reduce the time it takes you to complete the survey. Your participation is voluntary and you may withdraw at any time. All personal information gathered in this survey will be handled confidentially and will only be applied for statistical analysis. It will not be shared with the FWF or any third party. The report from the project will not include information that could identify individuals or research groups. When alle analysis of the survey replies are completed (September 2023), the replies will be anonymised so that no replies may be linked to an identifiable individual. See information on GDPR and your rights below.
>
> **FWF reviewer survey:** By submitting the form, you give consent to participating in the survey. Your participation is voluntary and you may withdraw at any time. All personal information gathered in this survey will be handled confidentially and will only be applied for statistical analysis. It will not be shared with the FWF or any third party. The report from the project will not include information that could identify individuals or research groups. When all analyses of the survey replies are completed (September 2023), the replies will be anonymised so that no replies may be linked to an identifiable individual. See information on GDPR and your rights below.

And they received the following information on GDPR and their rights:

GDPR - YOUR RIGHTS

This project complies with current data protection legislation/GDPR and we will process information about you based on your consent. Based on an agreement with NIFU, The Norwegian Centre for

Research Data (NSD) has assessed that the processing of personal data in this project is in accordance with data protection legislation. As long as you can be identified in the data material, you have the right to access the personal data being processed about you; to have personal information about you corrected or deleted; obtain a copy of your personal data (data portability), and send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding processing of your personal data.

3 Collection of email addresses

We distributed the surveys and sent reminders by email. We received a list of applicant's emails from the FWF (N = 242). For the reviewers we got a list of emails from the European Science Foundation (ESF) (N = 135). This included all reviewers except 5 who replied negatively to an email sent out by the ESF asking for consent to share their email address with NIFU in order for NIFU to invite them to participate in the survey.

4 Data collection

Table 1 shows the process of data collection for both surveys. In an attempt to increase the response rate of the surveys, the invitation to both surveys included link to a letter of support from the president of the FWF. This letter outlined the purpose of the evaluation and encouraged applicants and reviewers to respond to the survey.

	Invitation	First reminder	Second reminder	Third reminder	Fourth reminder	Closing of survey
Applicant survey	19.07.2022	16.08.2022	02.09.2022	12.09.2022	21.09.2022	26.09.2022
Reviewer survey	20.06.2022	28.06.2022	29.08.2022	12.09.2022	-	19.09.2022

The response rate of each survey increased with each reminder we sent, but the percentage increase in response rate was highest for the first reminders and decreased somewhat for later reminders.

Due to some miscommunication between NIFU and FWF the applicant survey was initially distributed to applicants 07.07.2022. At this time, the applicants had not received their reviews and decision on the preproposals. As a result, we quickly closed the survey and sent out an information email to all applicants stating that the survey would remain closed until they had received their reviews and decisions. When we received notice about this from the FWF the survey was reopened, and all applicants received the distribution email (date: 19.07.2022). Six applicants had completed the survey before it was closed, and these applicants received emails informing them about the opportunity to update their answers, but none of these applicants used this opportunity.

5 Response rate – applicant survey

242 applicants were invited to the survey and 121 of these responded to the survey. This results in a response rate of 50.0 %. However, two applicants had emails that were no longer valid and never received the survey. As a result, the sample consists of 240 applicants and the response rate increases to 50.4 %. We received some background information on the applicants from the FWF which gives us important information on the representativeness of our data compared to the total sample. The tables below show how the sample is distributed across background variables (gender, function in cluster, discipline and if they were shortlisted for full proposal or not). Based on table 1 there does not seem to be any gender bias, but tables 2-4 show that directors of research, applicants within NaTec and shortlisted applicants answered the survey to a larger degree.

We obtained replies from all 35 proposed CoE projects (1 to 6 replies per project). For 27 of the projects the Director of Research is among the respondents (Table 2).

Table 1: Response rate by gender.

Gender	Sample	Responded
Female	32.9 (79)	33.1 (40)
Male	67.1 (161)	66.9 (81)
Total	100.0 (240)	100.0 (121)

Table 2: Response rate by function in cluster.

Function in the cluster	Sample	Responded
BOD Member	85.4 (205)	77.7 (94)
Director of Research	14.6 (35)	22.3 (27)
Total	100.0 (240)	100.0 (121)

Table 3: Response rate by discipline.

Discipline	Sample	Responded
BioMed	32.9 (79)	26.4 (32)
NaTec	40.8 (98)	45.5 (55)
SSH	26.2 (63)	28.1 (34)
Total	100.0 (240)	100.0 (121)

Table 4: Response rate by shortlisting for full proposal.

Shortlisting for full proposal	Sample	Responded
Not shortlisted	67.5 (162)	63.6 (77)
Shortlisted	32.5 (78)	36.4 (44)
Total	100.0 (240)	100 (121)

6 Response rate – reviewer survey

135 reviewers were invited to the survey and 63 of these responded to the survey. This results in a response rate of 46.7 %. However, four applicants had emails that were no longer valid, and they therefore never received the survey. As a result, the sample consists of 131 reviewers and the response rate increases to 48.1 %. We received limited background information on the reviewers. The only background variable we had was country. Table 5 below show how the sample is distributed across the country variable. The table shows that there are some differences, reviewers from the UK have for instance responded to the survey to a larger degree.

Table 5: Response rate by country.

Country	Sample	Responded
Australia	6.1 (8)	9.5 (6)
Belgium	3.1 (4)	1.6 (1)
Canada	6.9 (9)	7.9 (5)
Finland	3.1 (4)	3.2 (2)
France	10.7 (14)	11.1 (7)
Germany	7.6 (10)	4.8 (3)
Greece	3.1 (4)	3.2 (2)
Italy	8.4 (11)	12.7 (8)
Netherlands	4.6 (6)	3.2 (2)
Spain	6.9 (9)	6.3 (4)
United Kingdom	14.5 (19)	17.5 (11)
United States	12.2 (16)	9.5 (6)
13 countries with 1-2 invited each	13.2 (17)	9.5 (6)
Total	100.0 (131)	100.0 (63)

Appendix 6 Results applicant survey

Background variables

	Count	Percentage	Total
Female	40	33.06	121
Male	81	66.94	121
BOD Member	94	77.69	121
Director of Research	27	22.31	121
BioMed	32	26.45	121
NaTec	55	45.45	121
SSH	34	28.10	121
Not shortlisted	77	63.64	121
Shortlisted	44	36.36	121

1. What was the basis for the consortium you formed for the Cluster of Excellence proposal? (multiple replies possible)

Question	Not selected	Selected	N
Previous research collaboration among the consortium members	34.71	65.29	121
Previous research collaboration among researchers at my institution	66.94	33.06	121
New research collaboration among the consortium members	13.22	86.78	121
New research collaboration among researchers at my institution	70.25	29.75	121
Other:	97.52	2.48	121

2. Apart from you and your group, who was involved in deciding whether or not the proposal was to be developed and submitted (to the FWF)? (multiple replies possible)

Question	Not selected	Selected	N
The top leadership of my institution	33.06	66.94	121
The top leadership of the collaborating institutions	38.84	61.16	121
Leadership at my faculty/school/similar level	74.38	25.62	121
Leadership at partners' faculty/school/similar level	74.38	25.62	121
Leadership at my department/similar unit	81.82	18.18	121
Leadership at partners' department/similar unit	84.30	15.70	121
Other:	93.39	6.61	121

3. How would you describe the pre-selection of Cluster of Excellence proposals at your home institution?

q3	Frequency	Percentage
No pre-selection: All formally eligible applicants were allowed to submit a proposal	20	16.95
Informal pre-selection process: Which proposals to submit were discussed and decided in informal meetings/settings	61	51.69
Formal pre-selection process: There was a defined procedure for deciding which proposals to submit	22	18.64
Other:	15	12.71
Total	118	99.99

4. My home institution supported my consortium's proposal by: (multiple replies possible)

Question	Not selected	Selected	N
Dedicating funding/time to develop the proposal	62.81	37.19	121
Contributing with administrative support	43.80	56.20	121
Help in forming the consortium	89.26	10.74	121
Organising internal review(s) of the proposal	85.12	14.88	121
Other (fill in below):	84.30	15.70	121

6. Considering your Cluster of Excellence application, to what extent did you find the following issues/processes satisfactory?

Question	1 = Not at all	2	3	4	5 = To a great extent	Cannot say	N
a. The clarity of terms and requirements for LoI[1]	1.83	8.26	10.09	53.21	22.94	3.67	109
b. The clarity of terms and requirements for pre-proposals[1]	2.78	10.19	19.44	45.37	18.52	3.70	108
c. The support from the FWF in preparing proposals[2]	0.00	5.56	22.22	33.33	25.93	12.96	108
d. The support from your home institution in preparing proposals[3]	14.95	11.21	23.36	23.36	20.56	6.54	107
e. The competence of the experts reviewing the pre-proposals	2.75	11.93	22.02	34.86	19.27	9.17	109
f. The transparency regarding decisions on the pre-proposals round	12.04	16.67	20.37	22.22	20.37	8.33	108
g. The clearity and the completedness of the feedback to applicants[4]	8.33	13.89	23.15	37.04	13.89	3.70	108
h. The time and efforts needed to prepare a LoI	4.67	5.61	25.23	49.53	13.08	1.87	107
i. The time and efforts needed to prepare a pre-proposal	9.26	16.67	31.48	32.41	10.19	0.00	108
j. The time from submitting the pre-proposal to the result of the pre-proposal round was announced	5.56	13.89	28.70	33.33	14.81	3.70	108

[1]Call documents.

[2]E.g. information events, consultations services.

[3]Information events, coaching, consultation services.

[4]On the pre-proposals.

7. To what degree do you think the reviewers who assessed your pre-proposal:

Question	1 = Not at all	2	3	4	5 = To a great extent	Cannot say	N
a. Were able to assess all fields of research involved in the application?	5.56	12.96	19.44	37.96	14.81	9.26	108
b. Provided an impartial and unbiased assessment of your application?	2.78	15.74	23.15	28.70	23.15	6.48	108
c. Provided a thorough assessment of your application?	3.70	11.11	25.93	37.04	17.59	4.63	108

8. When comparing to your other relevant funding sources, is the FWF Cluster of Excellence scheme poorer, about the same or better, concerning:

Question	Poorer	About the same	Better	Cannot say	N
a. Reviewer competence	21.10	56.88	11.93	10.09	109
b. The transparency of the selection process	27.78	53.70	10.19	8.33	108
c. The handeling of intellectual property and confidential information	3.74	47.66	0.93	47.66	107
d. The impartiality and ethical standard of the selection process	9.26	58.33	2.78	29.63	108
e. Your general confidence in the selection process	33.03	55.05	8.26	3.67	109
f. Time and efficiency of the application and selection process	27.78	58.33	12.04	1.85	108
g. Impact on the prestige and career of the awarded investigators/researchers	7.41	28.70	48.15	15.74	108
h. Amount of funding	14.68	25.69	54.13	5.50	109
i. Flexibility of use of funds	16.82	37.38	25.23	20.56	107
j. Support for young scientists	6.48	53.70	23.15	16.67	108

9. Selection criteria: The pre-proposals were assessed by their research programme, team of researchers and research environment. To what extent do you think these were appropriate criteria to assess your proposal?

Question	1 = Not at all	2	3	4	5 = To a great extent	Cannot say	N
a. Adequate criteria for research programme	1.87	3.74	9.35	46.73	34.58	3.74	107
b. Adequate criteria for team of researchers	3.74	3.74	15.89	35.51	37.38	3.74	107
c. Adequate criteria for research environment	2.80	2.80	19.63	42.06	29.91	2.80	107

11. In your opinion, to what degree does the Cluster of Excellence scheme provide the appropriate policies and review process to:

Question	1 = Not at all	2	3	4	5 = To a great extent	Cannot say	N
a. Establish long-term, internationally leading research fields in Austria?	0.93	8.41	17.76	28.97	37.38	6.54	107
b. Enable achievements that could not be reached by individual research units (creating synergies between research environments)	0.93	5.61	17.76	21.50	50.47	3.74	107

Appendix 7 Results reviewer survey

1. Your grant review experience. Please indicate the approximate number of grant proposals you have reviewed in the last 10 years.

Question	0	1-5	6-20	Above 20	N
a) Grant proposals reviewed for the FWF (not including the Cluster of Excellence proposal)	6.35	76.19	14.29	3.17	63
b) Grant proposals reviewed for other funding agencies	1.69	16.95	22.03	59.32	59

2. Please indicate your current (main) position:

q2	Frequency	Percentage
Full professor/similar	44	69.84
Associate professor/similar	6	9.52
Lead Researcher/Head of Research/similar	5	7.94
Assistant professor/similar	2	3.17
Postdoctoral fellow/Researcher/similar	0	0
PhD student	0	0
Other position at a research/higher education institution	1	1.59
Position not at a research and/or higher education instition. Please specify:	0	0
On leave/retired/not working	5	7.94
Total	63	100

3. Your age

q3	Frequency	Percentage
Below 30	0	0
30-39	1	1.59
40-49	14	22.22
50-59	18	28.57
60 or above	30	47.62
Total	63	100

4. Gender

q4	Frequency	Percentage
Female	28	44.44
Male	34	53.97
Other/prefer not to say	1	1.59
Total	63	100

5. Country in which you work (main affiliation, if on leave/retired/not working, last main affiliation):

q5	Frequency	Percentage
Australia	6	9.52
Belgium	1	1.59
Bulgaria	1	1.59
Canada	5	7.94
Denmark	1	1.59
Finland	2	3.17
France	7	11.11
Germany	4	6.35
Greece	2	3.17
Ireland	1	1.59
Italy	8	12.7
Netherlands	2	3.17
Poland	1	1.59
Portugal	1	1.59
Spain	4	6.35
Sweden	1	1.59
United Kingdom	10	15.87
United States	6	9.52
Total	63	100

6. Please select your (main) field of research from the dropdown list below. The list contains 42 (OECD) categories, numbered as follows: 1 Natural sciences; 2 Engineering and technology; 3 Medical sciences; 4 Agricultural sciences; 5 Social sciences; 6 Humanities; 7 Others. If you do not find your field of research on the list, please select the closest category, or provide your field of research in the 'other field' textbox. The categories are explained at the OECD web pages: http://www.oecd.org/science/inno/38235147.pdf

field_of_science	Frequency	Percentage
Agricultural sciences	1	1.67
Engineering and technology	8	13.33
Humanities	10	16.67
Medical sciences	7	11.67
Natural sciences	23	38.33
Other	2	3.33
Social sciences	9	15
Total	60	100

7. Adequacy of the review criteria: The FWF asked the reviewers to assess the proposals on the following criteria. For each of them, please indicate whether you think it is an appropriate criterion for assessing these proposals.

Criteria related to the research proposal/programme

Question	1 = Not at all	2	3	4	5 = To a great extent	Cannot say	N
a) The quality of the research programme, in particular in an international context	0	1.67	0.00	16.67	81.67	0.00	60
b) The programme's potential for innovation	0	1.67	8.33	35.00	55.00	0.00	60
c) The coherence of and added value generated by the proposed research programme	0	3.33	6.67	28.33	61.67	0.00	60
d) The programme's potential for generating significant synergies between the researchers involved	0	1.67	13.33	30.00	55.00	0.00	60
e) gender- and sex-related components of the research question and the approaches chosen	5	10.00	36.67	23.33	21.67	3.33	60
f) the research programme's ethics-related components	0	5.08	23.73	33.90	33.90	3.39	59

Criteria related to the team of researchers

Question	1 = Not at all	2	3	4	5 = To a great extent	Cannot say	N
g) The composition of the team and how suitable it is for meeting the research programme's goals	0.00	1.67	5.00	18.33	75.00	0.00	60
h) The composition of the team with repect to gender and diversity (such as the range of career stages represented in the team)	1.67	11.67	26.67	25.00	33.33	1.67	60
i) Quality of the individual researchers' previous work and their potential for making a significant contribution to the proposed research	0.00	1.67	6.67	28.33	61.67	1.67	60

Criteria related to the research environment

Question	1 = Not at all	2	3	4	5 = To a great extent	Cannot say	N
j) The quality and appropriateness of the research environment available to the CoE	0	1.67	6.67	43.33	46.67	1.67	60
k) Anticipated synergies between the institutions involved	0	1.67	6.67	48.33	43.33	0.00	60

9. Comprehensibility of criteria and ability to assess the Clusters of Excellence proposal. Please indicate to what extent you agree with the statements below.

Question	1 = Not at all	2	3	4	5 = To a great extent	Cannot remember/Cannot say	N
a) The review criteria were clear and easy to understand	0.00	0.00	6.56	27.87	65.57	0	61
b) The review guidelines provided by the FWF were clear and easy to understand	0.00	1.64	4.92	26.23	67.21	0	61
c) The proposal I reviewed was close to my field of expertise	0.00	0.00	4.92	31.15	63.93	0	61
d) I was able to assess the research programme in the proposal assigned to me	0.00	0.00	0.00	21.31	78.69	0	61
e) I was able to assess the team of researchers in the proposal assigned to me	0.00	0.00	1.64	21.31	77.05	0	61
f) I was able to assess the research environment in the proposal assigned to me	1.64	0.00	4.92	32.79	60.66	0	61
g) I was able to give an overall assessment of the proposal assigned to me	0.00	1.67	0.00	16.67	81.67	0	60

Difficulty of review and time needed compared to reviewing other grant proposals

Question	Less difficult	About the same	More difficult	Not applicable, I have not reviewed other grant proposals	Cannot remember / Cannot say	N
11. Compared to grant proposals you have reviewed for other funding schemes, was the Clusters of Excellence proposal less, about the same or more difficult to review?	8.2	75.41	16.39	0	0	61

Question	Less time	About the same time	More time	Not applicable, I have not reviewed other grant proposals	Cannot remeber / Cannot say	N
12. Compared to grant proposals you have reviewed for other funding schemes, did you spend less, about the same or more time on reviewing the Clusters of Excellence proposal?	1.64	78.69	19.67	0	0	61

14. In your opinion, to what degree does the FWF Clusters of Excellence scheme provide the appropriate policies and review procedure to:

Question	1 = Not at all	2	3	4	5 = To a great extent	Cannot say	N
a) Establish long-term, internationally leading research fields in Austria?	1.67	0	5.00	43.33	48.33	1.67	60
b) Enable achievements that could not be reached by individual research units (creating synergies between research environments)	1.67	0	6.67	33.33	56.67	1.67	60

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