INTERNATIONAL FOUNDATION FOR SCIENCE

Assessment of Proposals within the New IFS Strategy

Meetings and Workshop at the
African Academy of Sciences, Nairobi, Kenya

25 May – 2 June 2013

Contents

Introduction

The International Foundation for Science (IFS) held a series of eight (8) Scientific Advisory Committee (SAC) meetings, along with a workshop on the assessment of proposals (see programme in Appendix 1) within the new IFS strategy, at the African Academy of Sciences from 25 May through 2 June 2013 in Nairobi. The meetings and workshop involved many SAC members, IFS Trustees, Management, Scientific Coordinators and Administrators (see list of participants in Appendix 2).

IFS recently launched its ten-year strategy with three Approaches – Individual Research, Collaborative Research, and Contributing Innovation. At the end of 2012 the Board of Trustees (BOT) agreed three overarching Research Areas for the new strategy:

- Sustainable Natural Resources Management (including but not limited to: research on biodiversity; forestry; natural products, renewable energy and climate change)

- Water and Aquatic Resources (including but not limited to: water resources research; all aspects of research on freshwater, brackish and marine aquatic organisms and their environments)

- Food Production, Food Security and Nutrition (including but not limited to: research on food production; animal production; crop science including underutilized crops; food science, nutrition and food security issues)

The SAC meetings took place within the eight (8) former Research Areas of:

A – Aquatic Resources
B – Animal Production
C – Crop Sciences
D – Forestry / Agro-forestry
E – Food Science and Nutrition
F – Natural Products
S – Social Science
W – Water Resources

The purposes of the two-day assessment workshop were to:

- inform colleagues about recent changes at IFS
- review the existing proposal assessment process
- discuss modification of the proposal assessment process to make it more objective, fair and in line with the new IFS strategy

A working group – comprising BOT members, IFS Management colleagues, and members of the B and C SACs – met before the assessment workshop to make suggestions to the larger group of workshop participants, basing their discussions on three briefing documents on *From 8 to 3 IFS Research Areas and Assessing Proposals* (Appendix 3), *Modifying the Assessment System – Qualitative and Quantitative* (Appendix 4), and *The Role of the Scientific and Grants Committee (SGC)* (Appendix 5).

As a result of the workshop, it was expected that IFS, the Secretariat and SAC members would be better prepared to implement proposal assessment and to amend the granting process within the context of the new IFS strategy and its three Research Areas. This would entail written evaluation procedures to reach decisions on whether to recommend or reject proposal applications at the SAC and director levels.

A wrap-up meeting at the end of the week – attended by BOT members, IFS management, scientific coordinators and administrators and a few SAC members – reviewed and revised a summary of the outcomes of the workshop (Appendix 6) and discussed how to move forwards with the proposal assessment process.

Opening Session

The workshop was opened with remarks by the BOT Chair, Juerg Pfister, who spoke about how the week's events were part of a process that would lead to discussions and decisions by the BOT Executive Committee at the end of the week. Next steps would be taken in the coming months, enruring that the IFS funding cycle was not interrupted, with further discussions and decisions to be taken at the BOT meeting in November. He noted that with any changes in operations, there would need to also changes in the IFS statutes.

The IFS Director, Graham Haylor, talked about how the overall purpose of the week's gathering was to accomplish two important objectives: to share the ongoing changes and to get everyone's input on the assessment process.

The workshop facilitator, William Savage, then oriented everyone to the workshop programme, and pointed out the reference and other documents in the binder:

1. Programme for "Assessment of Proposals within the New IFS Strategy"
2. Statutes for the IFS (2002)
3. IFS Strategy 2011-2020
4. ISF Task Force July/August 2012 – Subgroup: Operational Aspects
5. The Areas of Research Funded by the International Foundation for Science and Annexes (2012)
6. 'Breaking Fences May Make for Good Neighbours in Collaborative Research – Why the International Foundation for Science Will Introduce a Collaborative Research Approach'
7. Agenda for the Working Group Meetings
8. Working Group Briefing Documents: From 8 to 3 IFS Research Areas and Assessing Proposals; Modifying the Assessment System – Qualitative and Quantitative; The Role of the Scientific and Grants Committee (SGC)
9. List of Participants

The Essence of Being Involved with IFS

Participants were asked to talk together at their seven tables in response to the question *What is the essence of being involved with IFS?* Their responses were:

Table 1
- With our mission and uniqueness, we all want to be connected.
- For personal reasons and our devotion to helping people.
- For North-South collaboration and integration and wanting to be part of that community.
- The issues in this workshop are not the real issues. Why do we need to amend the system?

Table 2
- IFS has an excellent niche to help young researchers to become successful in creating innovation.
- People like small grants.
- Receiving an IFS grant creates success and there are many examples.
- It gives collaboration and internationalization.

- Everyone is satisfied with their involvement.
- A vehicle to help scientists in the developing world.
- What IFS has been doing for 40 years is excellent; there is also a need to change whilst keeping the IFS niche in perspective.

Table 3

- Our grant system unique in the world, allowing young scientists to express their talent and allowing many to get a start.
- It is not only a grant but personal support is available through workshops, mentorships, contacts with reviewers and it is good to strengthen this.
- Personal motivations are to help and because it brings contact with fellow scientists. The science is important and we want people to develop.

Table 4

- Many former grantees are SAC members and trustees, and they all have different backgrounds.
- It is small money but at a critical stage, through travel and the other ways that IFS is opening doors.
- The base is the advisers; there is much personal gain, not money but contacts, networking, and insights into developing countries.

Table 5

- Support to high quality research.
- Many grantees can finish their theses.
- The grantee and alumni support is vital.
- Beginning with IFS they can also get support from TWAS, OPCW and ISP.
- IFS gives freedom: e.g., in Burkino Faso 12,000 USD is big money and gives wings to fly.
- Many grantees are good researchers, and can get further support after the IFS experience.
- Scientists and advisers give comments and advice, even if not a grant.
- SAC members are all senior scientists but they also learn and benefit from the process.

Table 6

- The reasons that IFS was set up are still important: the 'brain drain' and halting this and supporting colleagues on their return. The need is still there.
- There is a personal nature of IFS in communications with its grantees through letters, mentors, and detailed feedback. There is personal and one-to-one, even remote, communications.
- When SACs visit other parts of the world, we meet with grantees and hear from them and offer a workshop or lecture.
- It is not a one-way process: the understanding and looking for answers together is vital and happening. There is a role for ICT and communication platforms.
- SACs are like families and like to work together.

Table 7

- A challenge is the traveling to meetings.
- Sometimes science is not prioritized in many developing countries and IFS can help.
- Workshops help us to see developments.
- Former grantees can give advice to younger colleagues; it is important within IFS is to be able to do your own research and follow your own interests.
- IFS can sometimes be the only source of funding.
- Alumni can share knowledge.
- SACs are a benefit and help SAC members.
- We can strengthen the networks among individuals and institutions.

The New Research Areas

Ola Smith, IFS Trustee, gave a presentation on the process of developing the new research areas. The members of the task force were:

- Ola Smith, BOT
- Jean-Francois Giovannetti, BOT
- Atta-ur-rahman, BOT
- Yola Verhasselt, BOT
- Edith Taleisnik, BOT
- Graham Haylor, Secretariat
- Nighisty Ghezae, Secretariat
- Ingrid Leemans, Secretariat
- Richard Hall, Secretariat
- Malcolm Beveridge, SAC Member
- Sinclair Mantell, SAC Member
- Kjell Havnevik, Advisor

The task force's terms of reference, as guided by the framework of the IFS mission, were to:

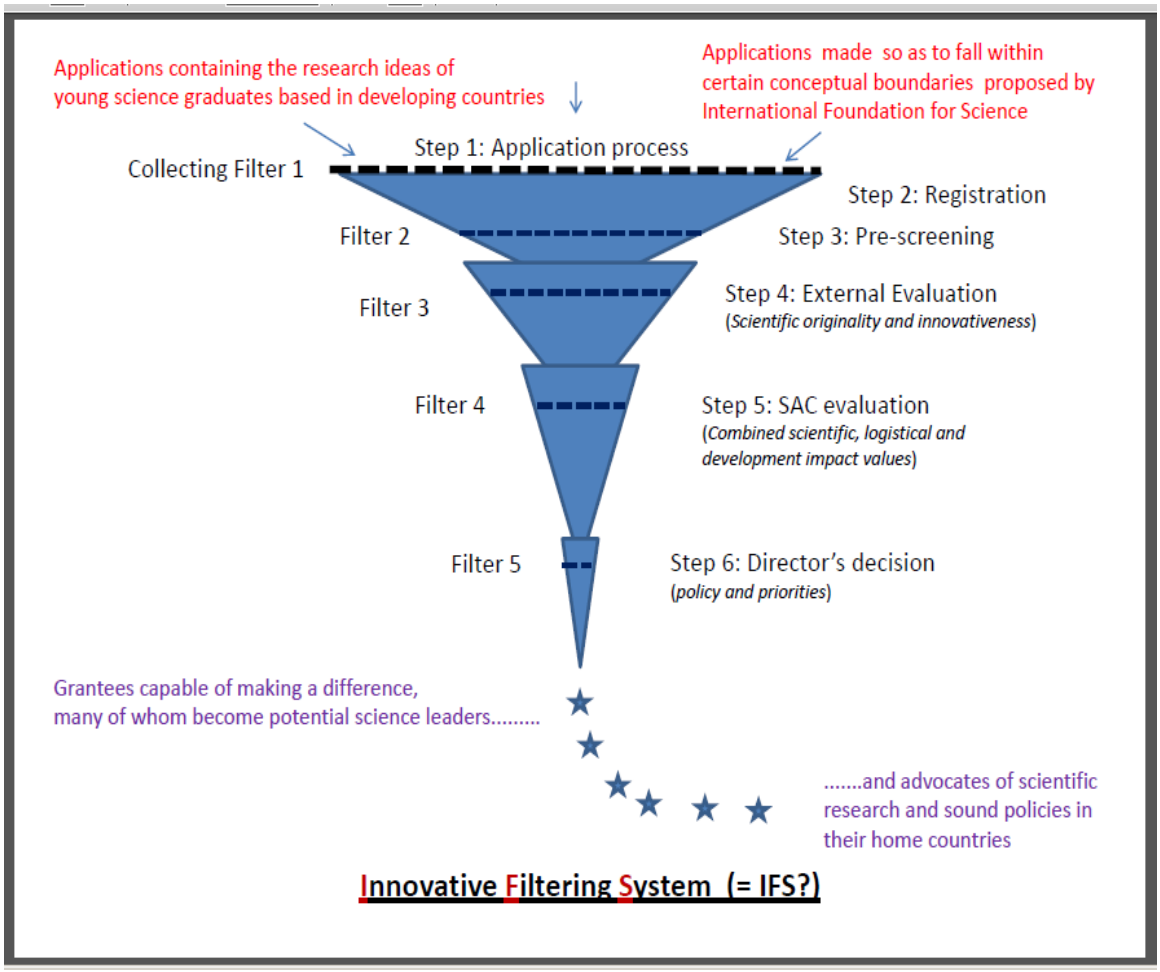
- Suggest 3-4 research areas to replace the existing 8
- Consider operationalization implications
- Make recommendations

The approach taken by the task force was to have open discussion on the current programme areas and terminology, to learn from the experiences and practices of SLU, CGIAR, TAS and CAADP, to have discussions at 2011 workshop, to elicit suggestions from task force members, and to process all of the ideas through the Delphi Technique, which is a decision-making tool that helps build consensus through anonymity of responses and iterations with controlled feedback.

The outcome of the process was the three research areas of:

- Sustainable Natural Resources Management
- Water and Aquatic Resources
- Food Production, Food security and Nutrition

A sub-group of the task force (Sinclair, Kjell, Malcom, Edith, Ingrid, Richard and Nighisty) was charged with considering the operationalization "fall-outs" of moving from eight to three research areas. Through open discussions they reviewed the current procedure at the Secretariat and boiled this down to seven steps, which they termed the Innovative Filtering System (IFS) (see figure below), from receipt of applications to final approval of selected proposals by the Director, and they identified potential impacts on the efficiency of operationalization.



The task force's outputs and recommendations were identified needs for:

- New application format
- Streamlined and harmonized filtering system to eliminate inter-SAC differences
- Development, purchase and use of a robust interactive database system with appropriate user friendly software
- Reorganization of the processing and evaluating team
- Resource Teams (Scientific Programme Coordinator, Programme Assistant, External Evaluators, Specialist Expert Advisors, and Senior Scientific Advisor)
- High level of collaborative consultations between management and the Resource Teams, to ensure efficiency

They also identified collateral issues of:

- Training
- Recruitment drive for advisers
- Remuneration of advisers
- Grant amounts
- The language issue

In conclusion, the bottom line is that the Secretariat staff will have to work in a more collaborative, consultative and collegial manner to equitably share and carry the anticipated additional workload and ensure a high level of effectiveness and efficiency.

Individual Research Approach

Nighisty Ghezae, IFS Head of Programme, gave a presentation on the Individual Research Approach.

The IFS Strategy 2011-2020 involves developing three research approaches as encapsulated by the envisioning process of 2010 and 2011. Approach 1 is the individual research grants to promote excellent science through early-career grants and capability-enhancing support to researchers in developing countries. It is a continuation of traditional IFS granting and associated support activities in scientific capability-enhancing but with some changes.

We re-assessed our research areas and eligibility criteria, and revised the application forms and guidelines. After preparation and planning, we launched the call (see the figure to the right), and adopted a "learning by doing' approach to implementing Approach 1 of the 10-year strategy

CALLS FOR APPLICATIONS

December 2012

CALL FOR APPLICATIONS
IFS Individual Research Grants

This call is for early-career scientists in IFS eligible developing countries to apply for IFS Individual Research Grants and carry out research projects for a period of up to 3 years. An applicant must have at least an MSc/MA, be younger than 35 years of age (for men) or 40 years of age (for women) and must do the research project in an IFS eligible country.

Young researchers wishing to start or consolidate their independent research careers and who fulfil the IFS eligibility criteria are welcome to apply.

More information:

> Read the full call
> Guidelines in English
> Guidelines in French
> Eligibility Criteria (including eligible countries)
> Application Form
> Renewal Application Form (for previous IFS Grantees)

DEADLINE FOR APPLICATIONS: **27th January, 2013**

As we have heard, the traditional eight scientific areas have been reconsidered into three broad research areas:

- Sustainable Natural Resources Management (including but not limited to: research on biodiversity: forestry; natural products, renewable energy and climate change)
- Water and Aquatic Resources (including but not limited to: water resources research; all aspects of research on freshwater, brackish and marine aquatic organisms and their environments)
- Food Production, Food Security and Nutrition (including but not limited to: research on food production; animal production; crop science including underutilized crops; food science, health and nutrition and food security and equity issues)

The three research areas are aligned to current global scientific thinking on the urgency of finding appropriate solutions to the many challenges associated with sustainable management and use of biological and water resources.

The three research areas address some big global challenges:

- Environmental degradation is increasing.
- Biodiversity is reducing.
- Climate is changing.

And they also take advantage of opportunities:

- There is a global consensus to eradicate extreme poverty and hunger.

- Planetary boundaries within which humanity can operate sustainably are increasingly understood.

We need to draw on the transformational power of science, technology and communications to safely and fairly ensure the stewardship of our natural resources. By redefining the eight research areas into three, we hope to increase the focus of the research proposed and carried out by IFS applicants based in developing countries towards application of science to address important sustainability and environmental issues.

The new eligibility criteria on age are:

- Men 35 and women 40 for first time applicants
- No age limit for renewal applications
- Applicants can receive a total of three grants. However, at least one of these should be collaborative research.
- Revised and rewritten applications should follow the same eligibility criteria as first time applications.

New country eligibility criteria are:

- Developing countries with a Gross National Income (GNI) per capita, using the Atlas method (current US$) at or below the average for Middle Income Countries (MIC)
- Now replacing the distinction between so-called "30-70%" country designations.

On the call for applications, the two 6-month sessions are being replaced by time-bound calls. On 5 December 2012 the first call of the new IFS strategy was opened until 27 January 2013 at 2400 GMT, with an end of session (i.e., applicants informed) at the end of July 2013.

The application form was revised for individual first grants (in English only) with separate guidelines in English and French, and slightly modified renewal application form was devised.

The new process for incoming applications is:

- Automatic reply sent to all incoming e-mails (applications@ifs.se), confirming receipt of e-mail and that they will be informed by the end of July 2013 (earlier e-mails received manual confirmation)
- One person to respond to general questions and requests for information related to applications, and a task force group to respond to more complicated questions (programme@ifs.se).
- A signed first page to be sent electronically with the application form. A paper copy to be sent later upon request. The signed first page will not be saved electronically, but will remain linked to the e-mail.

The new numbering system in the database shows the new research areas:

- I1 Sustainable Natural Resources Management
- I2 Water and Aquatic Resources
- I3 Food Production, Food Security and Nutrition
- I4 Combination of above areas
- XX - Not Chosen

We started a process of upgrading all information that will be automatically incorporated from the application form into the database, to facilitate and optimize the workflow for programme staff, and

also to provide opportunities for later retrieval of the information for our monitoring and evaluation system.

The figure below shows the applications received as of 27 January 2013 and their distribution in the eight current scientific areas (vertically) and the three new research areas (horizontally).

Row Labels	I1	I2	I3	I4	XX	Total
A	21	42	8	17		88
B	29		95	13		137
C	83		164	38	2	287
D	142	2	15	16	4	179
E	14	1	145	6		166
F	134	2	11	21	1	169
M	1					1
S	51	10	49	28	3	141
W		185				185
Y	1			1		2
Z	11		4	10	1	26
Total	**487**	**242**	**491**	**150**	**11**	**1381**

The number of applications taken to the SACs appear in the figure below.

Row Labels	Number of incoming applications	Number of applications taken to SAC
A	88	48
B	137	53
C	287	95
D	179	94
E	166	52
F	169	76
M	1	0
S	141	34
W	185	100
Y	2	0
Total	1355	552

Collaborative Research Approach

IFS Director, Graham Haylor, gave a presentation on the collaborative research approach. He first noted that for the 2012 individual research call, there are new eligibility criteria and new research areas, as described by Nighisty. The collaborative research is being piloted in 2012-13 on the topic of "Neglected and Underutilised Species Research in Ghana, Nigeria, South Africa, Tanzania and Uganda". The third approach, contributing innovation, will be piloted in 2013 through awareness raising, capability enhancing support, and networking activities.

In piloting the collaborative research approach, Graham acknowledged Brian Porter, the technical lead on this pilot, SSES, who are collaborative research specialists, and Carnegie, providing close scrutiny and support. He described the process as follows.

> We built on our understanding and sought learning from some highly experienced organisations, such as The International Centre for Development Oriented Research in Agriculture (ICRA) and Wageningen International, both of which shared their experiences of interdisciplinary early post graduate research; Resilience, a Wageningen-based foundation that undertakes research and gives advice and insights into research; and The Institute of Development Studies (IDS) Knowledge Services. Collectively these organizations have invested many tens of millions of dollars in the evolution of collaborative research in the field of management of natural sciences.
>
> Collaboration can influence the scale, scope and efficacy of research outcomes. Some commonly ascribed benefits are:
>
> - sharing of knowledge, skills and techniques
> - tacit knowledge transfer
> - learning social and team management skills
> - sourcing creativity
> - intellectual companionship
> - greater scientific visibility
> - pooling equipment
>
> Some commonly ascribed costs are:
>
> - finding collaborative partners
> - financial costs
> - time costs
> - administration
> - reconciling different financial systems, management cultures and mechanisms
>
> In an effort to ameliorate these costs the IFS collaborative research approach is offering a dedicated social networking platform to find collaborative partners, small collaborative research grants to address financial costs, and capability-enhancing support to alleviate time costs, administration, and reconciling different financial systems, management cultures and mechanisms.
>
> With EU-ACP support – through the project "Building human and institutional capacity for enhancing the conservation and use of neglected and underutilized species of crops in West Africa, and Eastern and Southern Africa" – we provided capability-enhancing support in Collaborative Research Design and Data Analysis for Neglected and Underutilized Species (NUS) in June 2012 in Accra, Ghana.

To pilot social networking for collaborative research, we characterized our challenges and requirements so as to:

- enable researchers in different countries (often unknown to each other) to “meet”, get to know each other, share their work and interests
- have the possibility to create private “workspaces” to enable prospective teams to collaborate first on developing a proposal then on conducting collaborative research
- have collaborative tools available to support research planning and execution
- enable mentors to engage with prospective, and later, funded research teams
- develop a system that would support the monitoring and evaluation of the approach

We then:

- designed a Collaborative Research Grants protocol
- designed a Collaborative Research Grant Application process
- defined a Collaborators Charter
- investigated, designed, built and tested ICT tools
- negotiated free user PODIO licences as a donation to IFS
- developed an on-line application process using Wufoo
- launched a call for collaborative research into Neglected and Under-utilized Species by early-career scientists from Ghana, Nigeria, South Africa, Tanzania and Uganda

The steps in the social networking approach for the collaborative research grants pilot in 2012 were:

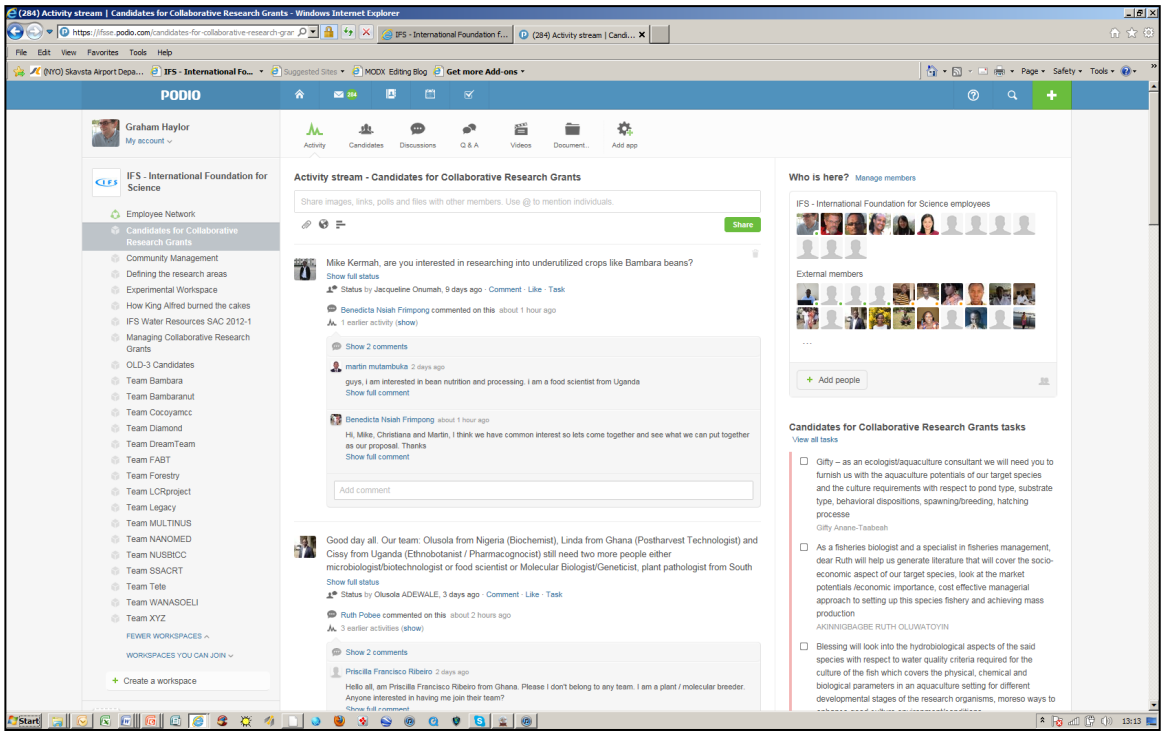
- IFS sends call
- Scientists express interest
- IFS creates social networking space on PODIO [any number of workspaces with members and apps (small programmes)]
- Applications to IFS

The process highlights are:

- Call on web
- Workshop participants
- Persons in DB from eligible countries
- Other websites
- Invitation to IFS social networking spaces built on PODIO
- Building teams
- Access to PODIO
- Big workspace (to find others)
- Team spaces (to make proposal)
- Document store
- Videos
- Mentoring
- Application
- Application forms made through on-line web-based forms created in WUFOO
- Three on-line forms on IFS web: CV Form, Collaborator Form, Team Form
- Two extra documents: budget, timeline
- Evaluation

- Pre-screening
- Collaboration
- Potential SACs

The work space on Podio is in the figure below.



What happened after the call went out?

- Within ten days, 800 applicants expressed interest.
- Of the eligible ones, 477 were entered into the online environment.
- There was substantial interaction on the site, with many thousands of exchanges among candidates, separate discussion threads with multiple responses, and an active Q&A function.
- Within weeks, 40 teams came together in dedicated digital work spaces to develop collaborative research proposals.
- The deadline for submission in February came 14 weeks after the launch.
- At the deadline 25 teams submitted full proposals involving 104 early-career scientists.
- Eighteen teams passed pre-screening and are invited to a three-day workshop in Ghana associated with the FARA Science week in July and run by SSES Collaborative Research Specialists.
- The same workshop has been offered to all the IFS Secretariat.
- All teams included West African scientists as well as East or Southern Africans, most of who had never met before.
- Sixty percent had never experienced collaborative research, though more than 95% had used some kind of social media sites before, mostly Facebook, LinkedIn and Twitter.
- Most used their own laptops, but more than a quarter used library or institutional computers.
- Over 70% reported good internet access.

- The IFS online environment was rated highly with over 82% reporting that it was excellent.

The best and worst things that survey respondents said were:

- The best thing was: I was amazed how easily I got attached to two researchers from outside my own country just by meeting on social media and working on a proposal.
- The best thing was: The collaborative idea that ensured from the Podio interactive environment. Meeting with and working with people you've never really seen face to face. It is also quite interesting that one can work within that time frame, develop a fundable proposal with others in the research environment irrespective of disciplines or areas of specialisation.
- The best thing was: That different research fields can be brought together in the same proposal. That people who barely know each other could become partners for a common goal.

- The worst thing was: I did not find a group that I could fit into properly. So I found myself without any group to fit in.
- The worst thing was: Some members dropped off the team which was not good for future collaboration as the rest of the team felt let down.
- The worst thing was: Getting a team member to submit their inputs as you try to beat the deadline for proposal submission.

The next stage is the assessment. IFS are seeking interested assessors and prospective Collaborative Research SAC members and volunteers are welcome.

Assessing Proposals within the Three Research Areas

Edith Taleisnik presented the outcomes of the discussion of the working group on the issue of "From 8 to 3 Research Areas and Assessing Proposals." The flow of the working group session was first a presentation of the three research areas and an overview of the new programme approaches (individual, collaborative and contributing innovation). The overall question for debate was how to administer the assessment of proposals within the new strategy?

On the evaluation of applications, it was recognized that the distinctive character of individual and collaborative research applications will require different evaluation processes. The individual ones are more discipline-focused (acquisition of expertise is the basis for effective collaboration) and the collaborative one are more interdisciplinary by nature.

Considerations on the product of the evaluation process are that:

- It should help and be fair to applicants (feedback generated during the discussions within the SACs is a distinctive part of the process).
- Excellence in proposals is non-negotiable.
- The current evaluation process has largely contributed to the prestige of IFS as an organization that can effectively identify promising early-career scientists in the poorest countries to enable them (through research grants) to work in their own country and tackle research issues related to local needs.

Considerations on the logistics of the evaluation process are:

- External evaluations are essential but currently not satisfactory (in number and quality). Can reviewers be suggested by SAC members? Can forms be simplified with clearly defined criteria? How about incentives for reviewers, such as acknowledgement letters?
- Can the workload of SACs be reduced by improving the pre-screening process? Not just pre-screen out the poor ones, but pre-screen in the excellent ones. Will this be unfair to applicants? How about the heavy reliance on external evaluations and extra work for the secretariat?
- It should not impose unrealistic workloads on the secretariat.

So the question is "How to go from 8 to 3 areas and how to handle evaluations in 3 areas?"

The participants in the workshop were asked to self-select themselves into groups associated with the three new research areas, to consider the above question. Their reports and notes from the ensuing discussions follow below.

Sustainable Natural Resources Management

On the description of the new IFS research areas:

- More precise descriptions of the three new research areas are needed in order not to confuse the applicants. Regarding the title of our research area, we believe that it should be "Biological Resources Management" rather than "Natural Resources Management" (water, land and soil are natural resources but are not mentioned in the description).
- Also we noticed that social science is not mentioned and that it is not clear how this important element in many of the incoming applications will be dealt with.

On the keyword information on SAC members:

- Keyword information on the SAC members needs to be up-dated in the IFS database. This is particulalrly important in relation to expertises so that searches can more easily be performed by members of the secratariat.
- It was recognized that new fields of science are constantly popping up and that a list of relevant keywords should be maintained by the SAC coordinators. The advisers should be restricted to choose relevant keywords describing their relevant IFS expertises from this list.
- In view of the reorganisation, the appointment of SAC members should be more flexible.
- It was suggested that SAC memberships should be more flexible to allow for variations in the number of applications to the different scientific fields covered by IFS.

On SACs:

- Assign SAC members for a certain time period, e.g., one to two terms (each term for three years). It is important not to rotate the core members at the same time.
- Assignment of SACs will have to be flexible.
- It was suggested that SAC members should be more actively involved in assigning external advisers in relation to certain applications.

Discussion

- Social sciences should be integrated across all areas, but we could have a group of social scientists who also review applications. Having all the SACs together will be important.
- Keyword information on SAC members needs to be updated in the IFS database, and we also need new words.

- Advisors should be able to select keywords from a prescribed list in ranked order, which would also provide people with broad expertise for collaborative SACs.
- We need to be more flexible now regarding SAC composition: core SAC members plus *ad hoc* members related to necessary fields after pre-screening.
- SACs should be more actively involved in assigning the external advisors.
- There was discussion on whether it should be Sustainable Natural Resources *Management* (which also includes control and vulnerability issues) or *Utilization* (although resources are not always utilized) and about adding the term *Research*.
- Why the change from 8 to 3 is not addressed.
- How to deal with applications that are interdisciplinary?
- How to deal with pure meterological climate change applications and others we receive in response to our descriptions?

Water and Aquatic Resources

- Are we conceding to donors?
- We could have three areas for announcement and eight areas for operation, to include energy and climate change fields.
- It is good to include social scientists in good number to serve all groups; they can move around during SAC meetings.
- The coordinator can set apart such applications needing expertise from social scientists in the beginning of the session (may be half of day one during SAC meetings).
- On the energy and climate themes, the present SAC has expertise to review impact and adaptation of energy and climate change thematic applications. Renewable energy issues, climate change scenarios, atmospheric, numeric and mathematical modeling areas will be out of the present SAC expertise. Particular energy issues could be well addressed by engineers.

On screening and scoring:

- For the background, project idea and project description, have a few (3-5) parameters, scoring 1 to 3 each [1 accept (excellent), 2 borderline (medium), 3 reject (poor)]
- All SAC members to read all applications and score; send scoring results to the coordinator.
- Discuss only borderline applications in the SAC (theoretically only 1/3).
- SAC duration: three days if there are 100 applications; same amount of time but good discussion and observations (30 applications per day = fair & just).
- Agree on a list of scores: scientific parameters, political and capacity building; one for pre-screening and one for the meeting.
- Continue the rapporteur and (critical) reader system of reviewing applications.

Discussion

- SACs to look at track record of reviewers.
- All SACs to meet at same time with lead time of five months.
- Six months ahead of call, an alert for prospective applicants.
- Climate and energy are not two new areas.
- Uneasy about SAC members pre-screening.
- Why are external advisors missing?
- Triaging is a good idea to relieve SAC workload but who does this is the issue. Secretariat and external advisors to score, then SAC to discuss triaged proposals.
- Feedback to applicants is vital.
- Problems with external advisors knowing the candidates. Advisors would have (too) much power.

- Most research councils have administrative pre-screening but in IFS applications are getting to SACs with pieces missing.
- There should be a published flow chart diagram of the process for the applicants, which is followed as this is a good feature of IFS and applicants should know this.
- Pre-screening by the coordinator is important; then the SAC concentrates on details.
- Why is there a deterioration in application quality? Because we have done away with training workshops? Proposal writing workshops could be reconsidered.

Food Production, Food Security and Nutrition

Some questions: Why change from 8 to 3 areas? Is it a donor-friendly policy? But why is 3 more appealing than 8?

There is a general feeling that the present working procedure of SACs is efficient; and that a structure of three research areas would create logistical problems and reduce content visibility.

In terms of uncertainties linked to the move from 8 to 3 research areas:

- Will the SAC structure continue or disappear?
- In the opinion of the working group, the present SAC structure and functioning should remain.
- Suggestion: SACs could consist of core members covering the predominant expertise plus "flexible" members covering application topics.
- Result: SAC structure and function maintained with core group and flexible participants.

The boundaries between areas 1 and 3 are not always clear: there are always transitional topics. How would evaluations of interface cases be managed? Suggestion: better formulated scope and keywords or descriptions so that applicants can better decide into which area (1,2 or 3) their application fits.

Moving from 8 to 3 increases the workload per SAC: increasing number of applications (expected post-screening 200 applications / area / year); increasing cross disciplinarity (e.g., microbial diversity, food quality, agroforestry, crop science, food production). Suggestion: one yearly meeting with all area groups allowing inter-SAC mobility and shuffling.

What about the number of scientific coordinators: will it decrease while the workload increases? Suggestion: automation (as done by scientific journals) of on-line applications, external adviser invitation (first the abstract, then give on-line access to application if accepted), SAC members may also suggest appropriate advisers, monitoring and follow-up of reminders for evaluations, reports, and up-loading of publications.

External advisors are needed for commenting on applications, the visibility and network of IFS in the scientific world, fairness, objectivity, and strengthening SAC decisions. Should the evaluation process rely more heavily on external advisors than on SACs? No.

The yield of response to invitations and quality of comments is frequently inadequate and variable for decision making. It also puts more individual responsibility and workload on the Scientific Coordinators. SACs are needed for consensus, independence and group responsibility.

We need to increase the number of external advisers according to subject area. Suggestion: a keyword system for applications would help the Secretariat to identify new advisers and SAC members; Give IFS access to ISI WoS/SCOPUS to search for external advisers; SAC members may help by suggesting appropriate external advisers; Enhance the value of external advice by giving more detailed guidelines regarding evaluation of scientific aspects.

Once a year evaluations cause unnecessary delay in the case of revised applications. Suggestion: intermediate procedure for these cases, allowing revisions to be submitted any time, and verified and approved on an *ad hoc* basis.

Discussion

- Opening up to more areas is also a function of the new areas.
- If the process is not broken why fix it? The principle is to indicate to our constituents that we are improving and moving with the times; donors are stakeholders and important ones. Eight areas are discipline oriented and we are moving to "working together" to have impact. This is the message of our 10-year strategy. That is why the areas are rather broad, so people can find themselves, and so we can have impact on the ground as well as scientific excellence.
- Themes are important but scientists work under disciplines and these can be brought to bare in the evaluation of proposals. The disciplinary scientists are the fundamental reviewers and this is not being changed. We must satisfy all of our constituencies.
- Donors (since 1995) talk all the time of administrative effeciencies. We review proposals and do more, e.g., feedback. Our change is motivated by many reasons but donors view our administration as cumbersome. We need to do something to ensure our funding base.
- In the system today, we should reflect on the level of the external reviewers. From long experience of research councils, we need external review and SACs. There are different models and they depend on this distinction. Workload is a driving factor. The system will not work in three research areas in its current form. We have the three areas so we have to discuss a system appropriate to that.
- From the applicants perspective they are not multi-skilled; they are disciplinary.
- Biodiversity and IFS have recently run seven training courses (NUS) and 1400 application notes are disciplinary in nature. To deal with multidisciplinarity you need to bring scientists together.
- IFS efficiency: small amounts of funds make an enormous impact. But one of IFS's greatest sets of assets are the SAC members. If you cost 60 SAC members x 700 Euros x 4 days, this is free.
- It takes a long time to get a good rapport going in a SAC.
- Going to donors, they have the power to say no. However much we think we give good value for money, it is what they think. There is clear argument if we have to go along with it.
- It is not only SACs; there are a lot of external advisers that are cost free. There are 274 external advisors in natural products alone.
- External reviewers are of uneven value; they need to be reviewed by SAC members.
- The question is how do we best deliver the three themes with advisors and SAC members.
- Do we need SAC members that can read disciplinary evaluations rather than every discipline represented in SACs?
- Why 8 to 3? It is less well explained in the research areas document than some would like so let us improve the explanation of why we have decided this.
- There are a number of similar suggestions for improvement.

Modifying the Assessment System – Qualitative and Quantitative

Juerg Pfister presented the outcomes of the discussion of the working group on the key question of: Does the merit-based qualitative assessment system of IFS need to be complemented with a scoring system? The conclusions of the working group were:

- The problem as described is acknowledged.
- Qualitative assessment and funding decisions need to be separated (as today).
- A scoring system should complement the qualitative assessment.
- The design of the external evaluation phase is crucial: we need to generally improve in that respect (more systematic reviewing).

- A scoring system requires a common set of reference points for all SACs (no factoring in of specificities), clear and specific information and evaluation forms, corresponding application and evaluation forms, and consistency checks on two levels: secretariat and SACs.

Discussion

- We may want to make the pre-screening a two-step procedure, with the project summary (with on-line tutorial to help) as the first step.
- The form needs modifying if scoring is to be introduced, e.g., the publication list is counted by number. Others felt this was not a problem. Age is an issue in publication lists.
- External evaluators should only assess the scientific quality (i.e., hypothesis, objectives, approach).
- Anonymize applications to external advisers.
- Agree with scoring but give score categories a description.
- Scoring should not look at means but at outliers.
- Agree with the concept of anonymity.
- External evaluations are extremely important.
- If scoring is only on science and the project is triaged on that basis, that could miss the other elements (beyond the scientific part of the application which might be, e.g., written by a supervisor). Scoring should be simple but not restricted to the scientific part. Impact would be scorable for example.
- External reviewers can become mentors and are often people the candidate has expressed an interest in getting to know.

Role of the Scientific and Grants Committee (SGC)

Ola Smith presented the outcomes of the discussion of the working group on the role of the SGC. The task was to discuss and make recommendations on the questions: Is there a role for the SGC in IFS? If yes, what should that role be?

As background to these questions, the SGC is a Board of Trustees committee that was set up in 1994 and comprised two BOT members and one adviser from each of the then six SACs. The committee was mandated to advise the BOT on scientific and granting policy matters, and to recommend approval of research grants. The mandate modified in 1999 and reduced to just advising the BOT on scientific and granting policy matters._During the period 1994 to 2008, the SGC addressed this mandate and carried out a number of activities, prominent among which were:

- Recommendations on the country eligibility issue
- Recommendations on the administration of various IFS awards (DANIDA, Silver Jubilee and Sven Brohult Awards)
- Review of application and evaluation forms
- Membership, composition and turnover of SACs
- Recommendation for a mission amendment for IFS

Nevertheless, in 1999 the SGC decided it did not have enough issues to discuss and advise on to justify meeting twice a year, and reduced its meeting frequency to once a year. Since 2008 the SGC has not met and has remained dormant for some 5-6 years, hence the pertinence of the questions: Is there a role for the SGC in the IFS? If yes, what should that role be?

The working group discussed these questions, and came to the conclusion that the dormant and moribound committee which did not operate during a period when the strategic approach to science

and granting was revived and modified should not be revived. This conclusion covered the two questions raised. Nevertheless, in light of the discussion and exchange of views the working group had on the issues of modifying the assessment system and moving from 8 to 3 research areas and assessing proposals, the group also examined the question of whether IFS needs or could do with another type of committee.
Ideas were exchanged on the pros and cons of:

- A super SAC that will participate in the final approval process following recommendations from the three SACs. The consensus was to be careful about adding another layer into the decision-making process which promises to be complex and complicated once decisions were taken on the on-going discussion of modifying the assessment process and moving from 8 to 3 SACs.
- A new group of globally renowned and eminent persons that will not only provide policy advice to IFS but also enhance its visibility on the global scale. The decision after some brainstorming on this issue was not to go in that direction because it will come with a high transaction cost with limited effectiveness. It would take too much time and resources to effectively bring this eminent group up to speed with the ins and outs of IFS so that they can confront these with their external global and useful perspectives, and factor these into their advice and recommendations. Otherwise IFS will get advice it may have to ignore hence the limited effectiveness of a high transaction cost adventure. The group however saw the usefulness of an advocacy role that will enhance the visibility of IFS. It therefore recommended that the Board should take on this role and ensure that it is or will be in a position to effectively carry it out.

In summary, the working group recommended:

- Do not resuscitate the SGC.
- Do not for the moment add another layer, group or committee to the evolving decision-making process, but rather give the system some time to work out the kinks and get going.
- The BOT should take steps to enhance and improve its oversight and advocacy roles, with the liberty to set up *ad hoc* groups if needed to support the system.

Summary of the Assessment Workshop for the Wrap-up Meeting

Following the workshop, the facilitator drafted a summary of the outcomes of the presentations, deliberations, and discussions. This was presented to a wrap-up meeting on the Friday, with BOT members, Secretariat management, Scientific Coordinators and Administrators, and several SAC members. They revised the summary to ensure that it is as accurate a representation as possible of the common ground discovered in the assessment workshop, along with points that look forward and some unresolved issues. The revised summary appears in Appendix 6.

Follow-up of the Assessment Workshop

Following the deliberations at the Assessment Workshop and the Wrap-up Meeting discussions the key question remained, in which administrative groupings to assess proposals in the three research areas. It was agreed at the Executive Committee (ExCo) meeting on May 31st that the IFS governance should *set the compass* (provide directional guidance) for this new way of working, and that an Assessment Working Group **should be established** with a specified timeframe to recommend the assessment approach within this directional guidance. A similar group working approach had met with success in the context of the 10-year strategy and the deliberation on the new research areas.

It was agreed by ExCo that Ola Smith would Chair the Assessment Working Group which should involve Trustees (including Wenche Barth Eide and Jürg Pfister), IFS Management (Nighisty Ghezae and Graham Haylor), Scientific Programme Coordinators, Advisers and SAC members, and that the timeframe for deliberation should conclude well in advance of the November Board of Trustees meeting. It will report to the ExCo by **10th October**.

Absent ExCo member Torbjörn Fagerström, who had been briefed on the Assessment Workshop by the chair, requested the meeting to seek the views of the Director and Head of Programmes regarding the framework within which the working group would deliberate, which the ExCo meeting agreed to do.

The ExCo, the Director and the Head of Programmes were keen to involve the staff in this process and also referenced their respective workloads in the coming months, concluding that coordinators previously representing the Secretariat staff, Ingrid Leemans and Richard Hall, may be best placed to represent the Secretariat staff in the working group to finalize how to take the assessment process forward. However, the representation would be at the discretion of Scientific Coordinators.

Directional Guidance on Assessment

This response by the IFS governance to the Assessment Workshop deliberations in Nairobi was provided on behalf of the Board of Trustees by **IFS EXECUTIVE COMMITTEE MEETING No 63, meeting at the African Academy of Sciences, Nairobi, Kenya on 31st May 2013**.

- **Pre-screening** should be undertaken by the Secretariat under the guidance of the Head of Programmes supported by the Scientific Programme Coordinators, Administrators and others as deemed necessary by the Head of Programmes. The process at this stage taking account of eligibility criteria, relevance to the IFS programme and also involving a light screening for quality against an agreed framework that should be consistent across the three research areas. Additional guidance on this should be drawn up by the Assessment Working Group regarding programme relevance and the light quality screening process.

- **External Review** is a vital step in the process of a research council and it should remain in the IFS assessment and be upgraded. The upgrade should include the following: there should be a renewed drive to recruit external reviewers and the networks and support of Trustees, Advisers and SAC members should be sought in this process. It should take place soon and become a regular process (perhaps biannually). Two or more external evaluations should always be sought for each application. It should be seriously considered if a part of the external review form could be filled in by the reviewer for direct sharing with the applicant (and with the reviewer's knowledge that it would be). It should be considered by IT staff and management how the process could eventually make maximum use of digital technology. External reviewers should be asked to assess the proposal for its merit against a set of criteria to be agreed by the Assessment Working Group but should not be asked if an applicant should be funded. The assessment process at the external reviewer stage should contain a quantitative

component to complement quantitative assessment. This should learn from the processes of others and build on the understanding of the best practice, e.g., in the use of Lickert scales, the number and description of scale categories, and the correct analysis of categorical data and be guided by the directional guidance on scoring adopted by IFS governance (see Appendix 7).

- **Scientific Advisory Committees** should remain at the heart of the assessment process. They should meet face-to-face and review applications within the three IFS research areas drawing on the pre-screening information made available by the secretariat, their external evaluations and their own reading of the application. Their role should be to curate the assessment information available to them on each application, to make a yes-no recommendation about funding, to collate and where appropriate add to and edit feedback to applicants, to derive and (ExCo strongly recommend) to pass on to the next assessment step a single individual score for each proposal to accompany their qualitative assessment. Ranking within scientific areas will cease. A scoring process to be used by the SAC should learn from the processes of others and build on the understanding of the best practice, e.g. in the use of Lickert scales, the number and description of scale categories, and the correct analysis of categorical data, and be guided by the directional guidance on scoring provided by IFS governance (see Appendix 7). There will no longer be eight disciplinary SACs. There will be a consistent IFS approach taken by all SACs against recommended guidance. SACs should be convened at a place and time in order to be able to meet together with other SACs regularly, if not annually; and often associated with an agreed complementary activity (such as a workshop, conference, field visit, meetings with grantees or others). The Assessment Working Group (which will report to ExCo on 10th October, approximately one month before the BOT44) will recommend to the Board of Trustees (BOT44) an appropriate mode of composition of Scientific Advisory Committees that will operate within the three IFS research areas. This will take into account that a range of social science and natural science disciplines cut across the three research areas of IFS and that these are administrative rather than substantive area divisions. The recommendations of the Assessment Working Group should include suggested ways forward regarding the tenure and turnover of SAC membership, non-remunerative incentives to take part (such as regular thanks to members and advisers and their university/institutional heads for the valuable services rendered), the proposed size of a SAC and the duration of its meeting, as well as any guidance on core and *ad hoc* membership, including a definition of these categories should they be considered necessary. The Assessment Working Group should also recommend any differences in the proposed SACs that will consider applications for the open call each year and the SACs later that year to consider revisions, re-writes and renewals, and potential complementary activities.

- **The Director's Decision** stage of the assessment process will not introduce new non-transparent selection criteria but will draw on the qualitative and quantitative assessments provided by the SAC. The SAC application scores will be used at this stage in the process to rank all applications within the cohort of the call. Ranking and triage will be used as tools in the process of make funding decisions based on the qualitative and quantitative assessments provided.

- **Collaborative SAC Procedures** are being piloted through the on-going Carnegie project. The BOT will recommend an IFS approach to Collaborative Research assessment drawing on the learning from the pilot in due course.

- **Monitoring and Evaluation** (M&E) of the IFS assessment system will be undertaken, which amongst other possible procedures will aim to compare the qualitative and quantitative assessments provided at the time of assessment with subsequent measures of post-project success, to be agreed upon. It should be considered by IT staff and

management, how the various data for the M&E process could best be captured and recorded.

- **This directional guidance** (the above compass direction, which shares governance decisions and provides directions for making further recommendations) shall form the basis of the task description and Terms of Reference for the Assessment Working Group which shall report to the BOT Chair by October 10th 2013.

The Executive Committee of the Board of Trustees (**ExCo)**

Appendix 1: Programme

Assessment of Proposals within the New IFS Strategy

Meetings and Workshop at the African Academy of Sciences
Nairobi, Kenya
25 May – 2 June 2013

Background

The International Foundation for Science (IFS) will hold a series of eight (8) Scientific Advisory Committee (SAC) meetings, along with a workshop on the assessment of proposals within the new IFS strategy. This will take place at the African Academy of Sciences from 25 May through 2 June 2013 in Nairobi. It will involve many SAC members, IFS Trustees, Management, Scientific Coordinators and Administrators. We also look forward to the opportunity of spending some time together at our partner organization, the African Academy of Sciences (AAS).

Events and Dates

2 SAC Meetings (B,C)	25-26 May
5 SAC Meetings (A,D,F,S,W)	27-28 May
Working Groups	27-28 May
AAS Public Lecture	27 May
IFS Dinner	28 May
Assessment Workshop	29-30 May
N&MC Meeting	29 May
Wrap-up Meeting	31 May am
ExCo Meeting	31 May pm
1 SAC Meeting (E)	31 May - 2 June

IFS recently launched its ten-year strategy with three Approaches – Individual Research, Collaborative Research, and Contributing Innovation. At the end of 2012 the Trustees agreed three overarching Research Areas for the new strategy:

- Sustainable Natural Resources Management (including but not limited to: research on biodiversity; forestry; natural products, renewable energy and climate change)

- Water and Aquatic Resources (including but not limited to: water resources research; all aspects of research on freshwater, brackish and marine aquatic organisms and their environments)

- Food Production, Food Security and Nutrition (including but not limited to: research on food production; animal production; crop science including underutilized crops; food science, nutrition and food security issues)

SAC Meetings

SAC meetings will take place within the eight (8) former Research Areas of:

A – Aquatic Resources
B – Animal Production
C – Crop Sciences
D – Forestry / Agro-forestry
E – Food Science and Nutrition
F – Natural Products
S – Social Science
W – Water Resources

Two of the SAC meetings will be on 25-26 May, five on 27-28 May, and one on 31 May – 2 June, juxtaposed with a workshop to discuss the process of proposal assessment within IFS in the context of the new strategy.

Assessment Workshop

The purposes of the two-day workshop on 29-30 May are to:

- inform colleagues about recent changes at IFS
- review the existing proposal assessment process
- discuss modification of the proposal assessment process to make it more objective, fair and in line with the new IFS strategy

Three working groups will meet on 27-28 May to make suggestions to the workshop participants.

As a result of the workshop, it is expected that IFS, the Secretariat and SAC members will be better prepared to implement proposal assessment and to amend the granting process within the context of the new IFS strategy and its three Research Areas. This will entail written evaluation procedures to reach decisions on whether to recommend or reject proposal applications at the SAC and director levels.

Wrap-up Meeting

The purpose of this wrap-up meeting on the morning of 31 May is to understand the outcome of the workshop and to agree on how to move forwards with the proposal assessment process.

Governance Meetings

The Nominations and Membership Committee (N&MC) and Executive Committee (ExCo) of the IFS Board of Trustees will also meet during the week in Nairobi.

Other Activities

There will also be opportunities for colleagues to interact with each other at:

- an AAS public lecture on 27 May
- an IFS-hosted dinner on 28 May

Reference Documents

These reference documents will be distributed in the binders:

- Statutes for the IFS (2002)
- IFS Strategy 2011-2020
- ISF Task Force July/August 2012 – Subgroup: Operational Aspects
- The Areas of Research Funded by the International Foundation for Science and Annexes (2012)
- 'Breaking Fences May Make for Good Neighbours in Collaborative Research – Why the International Foundation for Science Will Introduce a Collaborative Research Approach'

Schedule

Saturday and Sunday, 25-26 May 2013

SAC Meetings (9 am, depart Best Western Hotel for AAS at 8:20 am)
Former Area B Animal Production (Ingrid Leemans) [Room 210]
Former Area C Crops (Richard Hall) [Room 212]

Monday and Tuesday, 27-28 May 2013

SAC Meetings (9 am, depart Best Western Hotel for AAS at 8:00 am)
Former Area A Aquatic Resources (Ingrid Leemans) [Room 108]
Former Area D Forestry / Agro-forestry (Richard Hall) [Room 206]
Former Area F Natural Products (Eva Rostig) [Room 212]
Former Area S Social Science (Nathalie Persson) [Room 103]
Former Area W Water (Cecilia Öman) [Room 113]

Working Group Meetings (see detailed schedule in binder)
Jürg Pfister, Ola Smith, Wenche Barth Eide, Edith Taleisnik, Nighisty Ghezae, Former Area B SAC, Former Area C SAC and Graham Haylor

AAS Public Lecture on 27 May (5-6:30 pm at Lycos Grand Regency Hotel, depart AAS at 4 pm)
Building the World's Largest Science Infrastructure in Africa: Square Kilometre Array Telescope

IFS Dinner on 28 May (7 pm at Osteria Restaurant, depart Best Western Hotel at 6:30 pm)

Wednesday and Thursday, 29-30 May 2013

Assessment Workshop (see detailed schedule on next page)

Wednesday, 29 May 2013

N&MC Meeting (8 pm at Best Western Hotel)
Ola Smith (Chair), Wenche Barth Eide, Atta Ur Rahman (dialling in), Edith Taleisnik, Yunus Mgaya (dialling in) and Graham Haylor

Friday, 31 May 2013

Wrap-up Meeting (11 am – 1 pm, depart Best Western Hotel at 10 am)

ExCo Meeting (2-5 pm)
Jürg Pfister, Ola Smith, Wenche Barth Eide, Torbjörn Fagerström (dialling in), Nighisty Ghezae and Graham Haylor

SAC Meeting start-up (afternoon at Best Western Hotel)
Former Area E Food Science and Nutrition (Nathalie Persson)

Saturday and Sunday, 1-2 June 2013

SAC Meeting (continuing at Best Western Hotel)
Former Area E Food Science and Nutrition (Nathalie Persson)

Assessment Workshop
Wednesday and Thursday, 29-30 May 2013

Day One – Wednesday, 29 May 2013		
0800	Bus departs Best Western Hotel for AAS	
0900-0930	Welcome, introductions and workshop overview	▪ Jürg Pfister, IFS BOT chair ▪ Graham Haylor, IFS director ▪ William Savage, facilitator
0930-1030	Opening discussion on "The essence of being involved with IFS"	Groupwork to set the scene for the workshop
1030-1100	Break	
1100-1130	Presentation and discussion on the new Research Areas	▪ Ola Smith, IFS BOT vice chair
1130-1200	Presentation and discussion on Individual Research Approach	▪ Nighisty Ghezae, IFS head of programme
1200-1230	Presentation and discussion on Collaborative Research Approach	▪ Graham Haylor
1230-1330	Lunch	
1330-1530	How to assess proposals within the three research areas of the new strategy	Presentation by Working Group 1, followed by small group work and facilitated discussion
1530-1600	Break	
1600-1700	How to assess proposals within the three research areas of the new strategy	Reportback and discussion
1700-1730	Reflections on the day, looking ahead to Day Two	Facilitated discussion

Day Two – Thursday, 30 May 2013		
0800	Bus departs Best Western Hotel for AAS	
0900-1030	Modifying the assessment system – qualitative and quantitative	Presentation by Working Group 2, followed by small group work and facilitated discussion
1030-1100	Break	
1100-1230	Towards specifics of a modified assessment system	Reportback and discussion
1230-1330	Lunch	
1330-1530	The role of the Scientific and Grants Committee	Presentation by Working Group 3, followed by small group work and facilitated discussion
1530-1600	Break	
1600-1700	The role of the Scientific and Grants Committee	Reportback and discussion
1700-1730	Summing up	▪ William Savage
1730-1800	Workshop evaluation, next steps, and concluding remarks	Reflection on participants' workshop experiences and how the outcomes can be taken forward

Appendix 2: Participants

BARFOD, Anders
IFS Adviser, D-SAC
Denmark
anders.barfod@biology.au.dk

BARTH EIDE, Wenche
IFS Trustee
Norway
wbeide@gmail.com

BHUMIRATHANA, Amaret
IFS Adviser, E-SAC
Thailand
amaret@trf.or.th

BONGCAM-RUDLOFF, Erik
IFS Adviser, B-SAC
Sweden
erik.bongcam@slu.se

BONZI-COULIBALY, Yvonne
IFS Adviser , W-SAC
Burkina Faso
bonziy@univ-ouaga.bf

BOSIRE, Jared
IFS Adviser, A-SAC
Kenya
jbosire@kmfri.co.ke

CASTILLO, Luisa Eugenia
IFS Adviser, W-SAC
Costa Rica
lecastillo@una.cr

COOKE, Fadzilah Majid
IFS Adviser, S-SAC
Malaysia
fadzilahc@hotmail.com

DE GROOT, Peter
IFS Adviser, D-SAC
UK
peterj.degroot@gmail.com

DE KOCHKO, Alexandre
IFS Adviser, C-SAC
France
alexandre.dekochko@ird.fr

ERIKSSON, Annika
IFS Staff
Sweden
annika.eriksson@ifs.se

GEERTS, Stanny
IFS Adviser, B-SAC
Belgium
geerts.demedts@gmail.com

GHEZAE, Nighisty
IFS Staff
Sweden
nighisty.ghezae@ifs.se

GIANINNAZI-PEARSON, Vivienne
IFS Adviser, C-SAC
France
vgianinazzi@gmail.com

HALL, Richard
IFS Staff
Sweden
richard.hall@ifs.se

HARMSEN, Karl
IFS Adviser, C-SAC
The Netherlands
karlharmsen@yahoo.com

HAYLOR, Graham
IFS Staff
Sweden
graham.haylor@ifs.se

HOUGHTON, Peter
IFS Adviser, F-SAC
UK
peter.houghton@kcl.ac.uk

HOUNHOUIGAN, Joseph
IFS Adviser, E-SAC
Benin
hounjos@yahoo.fr

JACKS, Gunnar
IFS Adviser, W-SAC
Sweden
Gunnjack@kth.se

KAUTSKY, Nils
IFS Adviser, A-SAC
Sweden
nils@ecology.su.se

LALEYE, Philippe
IFS Adviser, A-SAC
Benin
laleyeph@yahoo.fr

LEEMANS, Ingrid
IFS Staff
Sweden
ingrid.leemans@ifs.se

LINDHE, Ingrid M
IFS Staff
Sweden
ingrid.lindhe@ifs.se

LITAUDON, Marc
IFS Adviser, F-SAC
France
marc.litaudon@icsn.cnrs-gif.fr

MARCUSSEN, Henrik Secher
IFS Adviser, S-SAC
Denmark
hsm@ruc.dk

MASIMIREMBWA, Collen
IFS Adviser, F-SAC
Zimbabwe
collen.masimirembwa@aibst.com

MURTHY, Venkatappa Krishna
IFS Adviser, W-SAC
India
profvkm55@yahoo.com

NOUT, Robert
IFS Adviser, E-SAC
Netherlands
Rob.Nout@wur.nl

NYANGENA, Wilfred
IFS Adviser, S-SAC
Kenya
nyangena2001@yahoo.com

OLLEVIER, Frans
IFS Adviser, A-SAC
Belgium
Frans.Ollevier@bio.kuleuven.be

OMUTO, Christian Thine
IFS Adviser, C-SAC
Kenya
thineomuto@yahoo.com

OUAZZANI, Jamal
IFS Adviser, E-SAC
France
jamal.ouazzani@icsn.cnrs-gif.fr

OWINO, Fred
IFS Adviser, D-SAC
Kenya
forin@kenyaweb.com

PERSSON, Nathalie
IFS Staff
Sweden
nathalie.persson@ifs.se

PFISTER, Jürg
IFS Trustee
Switzerland
juerg.pfister@scnat.ch

PRIMAVERA, Jurgenne
IFS Adviser, A-SAC
Philippines
jurgennep@yahoo.com

RESTREPO-TARQUINO, Ines
IFS Adviser, W-SAC
Colombia
inesrestrepo@hotmail.com

REUTRAKUL, Vichai
IFS Adviser, F-SAC
Thailand
vichai.reu@mahidol.ac.th

ROSTIG, Eva
IFS Staff
Sweden
eva.rostig@ifs.se

RUDEBJER, Per
IFS Adviser, D-SAC
Italy
p.rudebjer@cgiar.org

SANNI, Ambaliou
IFS Adviser, W-SAC
Bénin
sanni@intnet.bj

SAVAGE, William
Facilitator
USA
williamsava@gmail.com

SIMMONDS, Monique
IFS Adviser, F-SAC
UK
m.simmonds@rbgkew.org.uk

SMITH, Ola
IFS Trustee
Gambia
olabsmith@aim.com

TALEISNIK, Edith
IFS Trustee
Argentina
etaleisnik@yahoo.com

TOVAR, Juscelino
IFS Adviser, E-SAC
Sweden
Juscelino.Tovar@ffsc.lu.se

VAN DAMME, Patrick
IFS Adviser, C-SAC
Belgium
Patrick.VanDamme@ugent.be

WOLDEHIWET, Zerai
IFS Adviser B-SAC
UK
zerai@liverpool.ac.uk

ÖMAN, Cecilia
IFS Staff
Sweden
cecilia.oman@ifs.se

From 8 to 3 IFS Research Areas and Assessing Proposals

What is this about ... ?

In the new IFS strategy, increased emphasis is given to clusters of scientific disciplines, including research topics that cut across traditional disciplines, and even beginning to consider ways in which scientists, sometimes from different disciplines, might work together. For example, social science considerations cut across all of the natural science endeavours. The new strategic approach in IFS recognises that development and innovation come not only from single scientific areas but from combinations of science backgrounds acting together.

Having three relatively broad (in terms of scientific discipline) and larger conglomerated research areas, as well as increased social science evaluation considerations in all three areas, will have important implications for the assessment of research proposals.

The key objective here then, is one of reconsidering the administration of IFS research proposals, to establish how best to operate assessment procedures in three, rather than eight, research areas.

This raises a number of challenges. If each new research area were to have one SAC we will either need more days to evaluate applications, or a different way of conducting the assessment and the SAC meetings. Other SAC roles will be impacted by having three research areas. These too will need to be addressed.

Other things are changing too. The rate of application to IFS is increasing. If this relates to fewer calls for proposals, how should we address this in terms of scheduling, and how can we ensure renewal applications are not delayed by the new approach to scheduling?

What is the background ... ?

1. The current approach

A multitude of research topics are supported by IFS within the context of biological and water resources. Proposals for research projects address biological, chemical, or physical processes as well as social and economic relationships important in the conservation, production and renewable utilisation of the resource base. Research proposals must be of a high scientific standard, pose new scientific questions and must be relevant to the local environment and socio-economic conditions. Extension projects and the simple transfer of existing and well-established technologies have not been accepted.

Previously, in IFS, research areas were administered within eight scientific disciplines (A-W). They are now to be administered in three overarching research areas (1-3) (Figure 1).

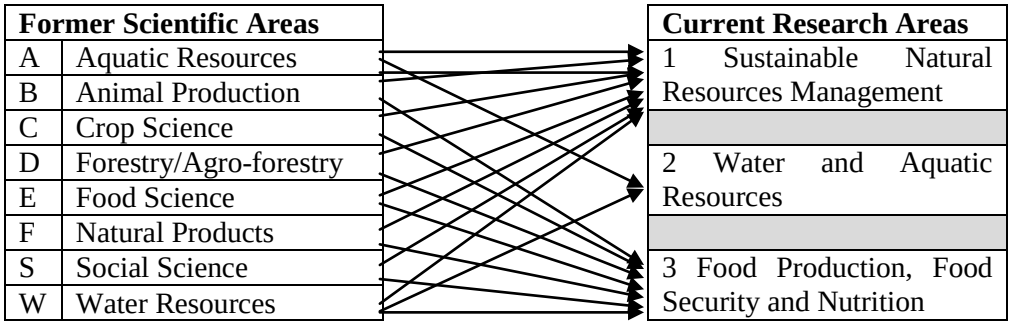


Figure 1: From eight scientific areas to three overarching research areas

IFS applications were previously submitted on a year-round basis and assessed in spring and autumn. Typically, 'the time from submission to award' could take 12-14 months. Currently, to shorten the time between application and response, IFS offer time-bound calls for proposals; most calls are open for 8 weeks and 'the time from submission to award' is now 8-10 months. There are two types of individual research applications: First Grant Application and Renewal Application.

The evaluation process

Following their receipt, applications have been registered and categorized into one of eight areas or disciplines. The assessment process has been based on qualitative assessments that are shared as a narrative. All applications have been pre-screened against eligibility criteria and undergo a light scientific screening. Those considered by Scientific Programme Coordinators (SPC) to be eligible and of an acceptable standard have been forwarded for external review to selected Advisers (international experts) who make recommendations. Applications have then been discussed at Scientific Advisory Committees (SAC) (comprising 4-6 experienced IFS scientific advisers and sometimes invited specialists) in eight separate SACs also taking into account adviser recommendations. Each SAC member will be a 'rapporteur' for approximately 12 applications. They make a serious review of these applications (fill in form) and read the external review comments. For applications coming from weaker countries, flexibility and intuition is often required regarding scientific quality and capacity strengthening considerations. The 'acceptable applications', rated A1 or A2, as judged by SACs (sometimes in ranked order within a research area or scientific discipline) have then been shared by SPCs with the IFS director. Some have been recommended pending small changes, and of those that have been rejected, some are invited to reapply. Up to two grant renewals have been possible. The renewals have a separate renewal grant form and are competitively reviewed by the SAC based on the analysis of the renewal grant form, and the evaluation of the final research report from the previous grant.

2. The objective

Applicants to IFS now submit their proposals within three overarching research areas, as described below. The areas have no substantial boundaries among them, and cross-cutting research topics are welcomed and encouraged.

- Sustainable Natural Resources Management (including but not limited to: research on biodiversity; forestry; natural products, renewable energy and climate change)

- Water and Aquatic Resources (including but not limited to: water resources research; All aspects of research on freshwater, brackish and marine aquatic organisms and their environments)

- Food Production, Food Security and Nutrition (including but not limited to: research on food production; animal production; crop science including underutilized crops; food science, nutrition and food security issues)

The key objective of reconsidering the administration of IFS research proposals is to establish how best to operate assessment procedures in three rather than eight research areas.

3. The challenge

Within IFS, Advisers, SAC members, Scientific Programme Coordinators and Administrators, and others have combined together in an evaluation process in eight disciplinary areas. Some have lent their valuable support to this effort, in this way, for many years.

In the new IFS strategy, increased emphasis is given to clusters of scientific disciplines, including research topics that cut across traditional disciplines, and even beginning to consider ways in which scientists, sometimes from different disciplines, might work together. For example, social science considerations cut across all of the natural science endeavours. The new strategic approach recognises that development and innovation come not only from single scientific areas but from combinations of science backgrounds acting together. Sometimes researching in this way can also help to address broader interlinked research questions.

A number of issues are set out below:

The new IFS strategy and research areas	**Some issues**
Having three relatively broad (in terms of scientific discipline) and larger conglomerated research areas as well as increased social science evaluation considerations in all three areas, will have important implications for the assessment of research proposals.	Which disciplinary scientists would be required to assess applications within the area of Sustainable Natural Resources Management?
	Which disciplinary scientists would be required to assess applications within the area of Water and Aquatic Resources?
	Which disciplinary scientists would be required to assess applications within the area of Food Production, Food Security and Nutrition?
	Should the composition of a SAC be fixed for an overarching research area, or should specialists be drawn from a pool of experienced SAC members based on the nature of the applications to be reviewed?
As it is now, a 2-day SAC meeting normally handles a maximum of 80 applications. This means that all SACs taken together discuss around 640 applications. If this rate were to continue within the three overarching research areas they would handle more than 200 applications each. If each research area were to have one SAC we will either need more days to evaluate applications, or a different way of conducting the assessment and the SAC meetings.	To avoid excessive assessment workloads by SACs, the scoring of proposals, in addition to qualitative assessment, followed by a triage system, could allow a concentration of SACs' effort on applications needing SAC discussion. For a detailed discussion on scoring, see the briefing document **'Modifying the Assessment System – Qualitative and Quantitative'**. Is there an alternative assessment model with greater use of Advisers as Subject Matter Specialists, and experienced SAC members taking on the role of assessing research projects 'in the round': e.g., are they logical, feasible, timely, appropriately budgeted?
The rate of application to IFS is increasing. An eight-week open call recently delivered more applications than is sometimes forthcoming over a	In this case how many open calls is it sensible to administer each year?
	If we have one open call each year for individual research applications, and perhaps one for collaborative

year.	research proposals at a separate time, is this a useful way to operate?
	If there is a long time between open calls, how should we deal with renewal grant applications? Should they be administered in a different way to avoid turn-around times for renewals being too long?
Research topics such as Climate and Renewable Energy will be likely associated with needs to identify new advisers and SAC members. It is always important to identify new advisers and SAC members within all disciplines.	How can IFS become better and more strategic in its recruitment of new specialists?
Other SAC roles will be impacted by having three research areas.	What are these issues and how should they be dealt with?

This is therefore to be discussed in working groups, in an assessment workshop and finally in governance meetings of IFS, where taking account of all the issues that have been captured, a policy decision will be made about the IFS assessment system.

Appendix 4: Briefing Document 2 for Working Group

Modifying the Assessment System – Qualitative and Quantitative

What is this about … ?

Comprehensive pre-screening and assessment of applications is an important part of the work of IFS and aims to ensure that we fund high quality research. It also allows us to provide detailed feedback to unsuccessful applicants, often equipping them with the information that can help them to write a winning application. This emphasis on assessment and feedback is highly valued [cf. the most recent (2012) external evaluation of IFS[1])] and **is not something we are looking to change**. **However**:

1. **The new IFS Strategy 2011-2020 includes agreed changes** which impact the previous assessment approach, which are:

- The former designation of 70% of funds to countries deemed to have poor scientific infrastructure is now superseded by the new poverty-focussed country eligibility.
- The prioritization of women candidates at '(relatively) advanced age'[2] through the allocation of 'remaining funds' at the director's decision level, is improved and superseded by the new eligibility criteria that applies differential age eligibility for women and men from the outset.
- The former 8 administrative research areas (based on scientific disciplines) have been replaced with 3 new overarching research areas.

2. **There are further calls for change to the previous assessment system**, from:

- The academic donors to IFS (through the key recommendation of Donor Group 40, November 2012) request IFS **to clearly indicate that our selection criteria for grantees and projects correspond to the standards of research funding institutions**[3].
- The IFS Board of Trustees (BOT) (at BOT 36 in November 2007) endorsed the SACSEC[4] meeting recommendations on assessment of applications and associated protocols as a 'living document' that should evolve, and agreed **to debate further a clear, understandable and fair system of granting decisions**.

3. To achieve these changes to our assessment approach, and in common with other research councils (see Appendix 1), this may require the introduction of a quantitative element to assessment, to complement and not replace the qualitative narrative. This could permit IFS to organise all the applications into ranked order (not just ranking within research areas) and thus provide for **a fully transparent mechanism, to fund the applications on merit**. This is therefore to be discussed.

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[1] Ian Christoplos and Johanna Bergman-Lodin (2012) External Evaluation of IFS Indevelop.
[2] According to the 2006-2007 IFS SACSEC Discussion Paper.
[3] 'Members of the DG are requested to explore possibilities of increased financial support by research funding institutions like national academies, research foundations etc. Preconditions for such commitments are, however, a clear indication by IFS that its selection criteria for grantees and projects correspond to the standards of those research funding institutions. IFS should advertise its selection criteria on its website so that its high and competitive standards are visible and transparent.' 40th Donor Group Meeting Final Conclusion, November 2012.
[4] In 2006 SAC representatives (from Forestry, Aquaculture, Social Sciences, Animal Production and Crop Production) proposed that the SACs, through their appointed representatives, meet at one time with all of the respective Programme Administrators and other Secretariat personnel to develop consensus on procedures used for assessment and prioritization of research grant applications at IFS. This meeting was referred to as SACSEC and took place on 25-26 January 2007.

What is the background ... ?

1. The current approach

In IFS, assessment follows an agreed protocol against assessment criteria[5]. The protocol (in brief) as it has been in recent years (2007-11) is:

> Following their receipt, applications have been registered and categorized into one of eight areas or disciplines. The assessment process has been based on qualitative assessments that are shared as a narrative. All applications have been pre-screened against eligibility criteria and undergo a light scientific screening. Those considered by Scientific Programme Coordinators (SPC) to be eligible and of an acceptable standard have been forwarded for external review to selected Advisers (international experts) who make recommendations. Applications have then been discussed at Scientific Advisory Committees (SAC) (comprising experienced IFS scientific advisers and sometimes invited specialists) in eight separate SACs also taking into account adviser recommendations. The 'acceptable applications', rated A1 or A2, as judged by SACs (sometimes in ranked order within a research area or scientific discipline) have then been shared by SPCs with the IFS director. The final stage, the 'director's decision', has concerned which of the acceptable applications are to be funded, and depends on the funds available. It had been a policy that 70% of research capital should be allocated to countries with the poorest scientific infrastructure. The allocation of any remaining funds at the 'director's decision' stage had been based on consideration of country, age and gender, such that the director's decision should aim to prioritize gender balancing and to ensure older female scientists are prioritised with funds remaining at this stage.

2. The objectives

The IFS Strategy 2011-2020 states that: 'The primary focus will be the promotion of excellent science through early career research grants and capability enhancing support to researchers in developing countries'. It goes on to specify that 'Applications for individual IFS grant support (Approach 1) will be selected on merit'.

The key objectives of the assessment of IFS research grant applications are:

- **'To provide detailed feedback to unsuccessful applicants'**.
- **'To specify that applications are of an acceptable quality**', we must therefore identify those which are not accepted.
- '**To support the most promising early-career scientists in the developing world**', we must therefore identify 'the most promising applications' from eligible scientists.
- **'To be able to select all the applications that we are able to afford to fund**'. IFS receive more applications than it has funds available. We must therefore select the most promising. If the quantum of funds available to us increases, we must be able to identify those additional applications we could also fund, or if it decreases we must be able to identify those we are unable to fund.

[5] The 'Assessment and prioritization of research applications at IFS' was last set out and discussed at the Scientific and Grants Committee meeting in 2006, the SACSEC meeting in 2007, and the Board of Trustees meeting in 2007.

3. The Challenge

A great deal of highly valued assessment is undertaken by IFS, and the current assessment approach allows identification of applications that are of an acceptable standard and provides for detailed feedback to failed applicants. Ranking within areas enables IFS to identify the most promising applications in each area. However, the process as currently recommended raises a number of issues, which are set out below:

The process as currently recommended (SACSEC 2007) and endorsed (BOT 2007)	**Some issues**
SACs should receive a clearly identified quota of funding likely to be available for grants.	For consistency in assessment, the 'quality assessment' and the 'funding allocation' decisions within a research council should be separated. Applications can then be assessed on merit, not on how likely it is that IFS has funds to support them. The reference point of SACs would then be acceptable quality from the applicant against agreed, consistent standards, and unrelated to changes in financial health of the research council. However, to avoid excessive assessment workloads by SACs, the scoring of proposals, in addition to qualitative assessment, followed by a triage system, could allow a concentration of SACs' effort on applications needing SAC discussion. A triage system (from the French word *trier* meaning to 'separate out') is a process of determining the most important people or things from amongst a large number that requires attention. Therefore: Quality assessment of applications by the SAC should be on merit, and separated from funding allocation decisions taken at the director's decision stage.
Each Research Area should be allocated a 'fair' share of the budget that will be set aside for grants irrespective of the total number of grants to be given. This allocation is currently based on the USD quantum of grants recommended by a given SAC, divided by the total recommendation by all SACs, multiplied by the research capital available to IFS.	Depending on the choice of reference point the same proposal can be assessed quite differently. Therefore it is vital that an assessment system must aim to avoid perverse incentives. (A **perverse incentive** is one that has an unintended and undesirable result which is contrary to the interests of the incentive makers.) The assessment system for research applications should incentivise comprehensive, merit-based assessment against common reference points. The current system design involves competition for funds amongst research areas and includes a perverse incentive, in that, an administrative research area that operates a less rigorous assessment approach would secure a greater proportion of the available research capital. In addition, whilst the current approach implies fairness amongst administrative areas within IFS, it is not a transparent system of IFS grant allocation based on the relative merit of applications. Because the current ranking system takes place only within research areas it is unable to compare between areas. Therefore

	differences in assessment approach (such as the use of different reference points) between administrative research areas will give rise to funding recommendations across IFS as a whole, that do not necessarily reflect the scientists' applications with most merit. Therefore: To avoid administrative area quotas that can be influenced by perverse incentives, quality assessment of applications by the SAC should be scored using a rating system common to all SACs, enabling applications to be rated across IFS as a whole, so that funding decisions can then reflect the relative merits of applicants.

Rather than creating additional *ad hoc* criteria at the director's decision stage of the process which could be considered as non-transparent or unfair, the breadth of assessment knowledge gained through the assessment process could be used at the final 'directors decision' point to ensure the most promising applications are funded, and to rationally amend this (to fund more or fewer applications) where the quantum of funding available to IFS changes. In other words, to conclude the evaluation with the generation of a list of all acceptable applications, with associated assessment narrative, ranked by merit, juxtaposed with a cumulative budget tally in USD. Then, whatever quantum of research capital is available to IFS would be allocated to fund the best applications.

It is possible to do this by eliciting unambiguous scores for selected aspects of applications. Scores have the advantage over ranks that they are numerically meaningful. Differences between scores given to different applications show the strength of the preference for one application over the other. The availability of a meaningful measurement scale also means that the resulting scores can be compared for all applications, allowing the creation of a ranked order of all applications across all scientific disciplines. Fully open scoring, where each item to be scored can be given any value within a particular range is the most flexible since it leads to observations that are independent of each other, a requirement for most simple statistical analysis procedures. Assembling all application scores received in a call, and their associated narrative assessment, then provides a ranking of the applications (in order of their score) with the associated narrative (i.e., reviewer and SAC comments about each application) to enable close ranked or tied rank applications to be distinguished from one another.

The introduction of a rating system, to complement and not to replace qualitative assessment, and the subsequent ranking of applications across IFS, rather than within administrative areas, then allows a transparent set of information to guide IFS to make the corresponding granting decisions against the quantum of research capital available to it. It also provides a mechanism to focus most discussions, around those applications that require most debate, i.e., to prioritise detailed qualitative assessment of those applications where there:

- are wide differences amongst advisors assessments;
- is a need to distinguish between those with close ranks or tied ranks; and,
- is a need to adjust and determine where amongst the hierarchy of assessed applications the final funding cut-off point will lie.

This is therefore to be discussed in working groups, in an assessment workshop and finally in governance meetings of IFS, where taking account of all the issues that have been captured, a policy decision will be made about the IFS assessment system.

Appendix 1: Learning from best practice in quality assessment

IFS is not unique in facing the challenge to assess varied applications for research funding. We can therefore learn from the best practises of others. In January 2011 the paper, QUALITY ASSESSMENT IN PEER REVIEW emerged from a Swedish Research Council seminar involving the Swedish Research Council (SRC) (over 5,000 applications annually) (including the fields of Humanities and Social Sciences, Medicine, Natural and Engineering Sciences, Educational Science, and Research Infrastructure) and the US National Institutes of Health (NIH) (over 100,000 applications annually), the Research Council of Norway (RCN), (over 5,000 applications annually), the Academy of Finland, the country's main research funding organisation (around 4,200 applications per year). It provides some useful learning.

The use of rating scales

The first learning is that rating scales are commonly used. All the research councils referenced above use rating scales as well as narrative assessment. In addition:

- We all rate things and experiences all the time. In the academic world as well as in everyday life, institutionalised grading has been used for a long time (rewards in relation to merit, grading of social groups, school grades, grading in sports and music competitions etc.).
- As established in 1951 by Stanley Smith Stevens[6] "Measurement is the assignment of numerals to objects or events according to rules."
- Measurement "consists of rules for assigning symbols to objects so as to represent quantities of attributes numerically (scaling).
- The best scales usually contain definitions of individual items and cues (a short narrative explanation) for the different scores.

Designing a scale

A 1956 article by George Miller[7] concluded that **the optimal number of response categories** in a rating scale is seven, plus minus two. Seven is the perfect amount that people can distinguish between and keep apart.

According to Marie Åsberg from the Department of Clinical Neuroscience at Karolinska Institutet, when constructing **definitions and cues in rating scales** it is good practise to consider the following:

- **Clarity**: definitions should be simple, unambiguous, and short.
- **Relevance**: must be of cue to item.
- **Precision**: cue must exist in correct rank on the rating scale.
- **Variety**: cues must not contain the same wording.
- **Objectivity**: ethical or social evaluation must be avoided.
- **Uniqueness**: avoid general terms e.g. good, fair, poor.

There are also a number of **classic rating errors** that have been explained, and one should be aware of and aim to avoid. According to J P Guilford (1954)[8] these are:

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[6] Mathematics, measurement, and psychophysics. Stevens, S. S. In Stevens, S. S. (Ed), (1951). Handbook of experimental psychology. , (pp. 1-49). Oxford, England: Wiley, xi, 1436 pp.

[7] A famous 1956 paper by George A. Miller, *The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information*. At a time when information theory was beginning to be applied in psychology, Miller observed that some human cognitive tasks fit the model of a "channel capacity," characterized by a roughly constant capacity in bits, but short-term memory did not. A variety of studies could be summarized by saying that short-term memory had a capacity of about "seven plus-or-minus two" chunks.

- **The Error of Leniency** – risking bias due to existing relationship or knowledge (colleagues etc.)
- **The Error of Central Tendency** – leaning towards the middle of the rating scale.
- **The Halo Effect** – when the expert has a general impression of something and lets this affect the rating.
- **A Logical Error** – experts making unconscious errors due to their own logic, that two things belong together (such as physics/mathematics).
- **A Contrast Error** – such errors are based on the expert's own characteristics, based on themselves. If the expert is aware of this, they can avoid making the mistake, which is an error in itself.
- **A Proximity Error** – when items are closely related or close to each other, they tend to colour each other and this can open for errors.

Using a scale

According to Professor Marie Åsberg there are a number of points to be aware of when we use scales:

- The afore-mentioned 'halo effect', when the expert has a general impression of something and lets this affect the rating, is **very strong. Preconceived ideas** have an overall value when influencing gradings of specific aspects.
- **Groups often seek coherence** so there may be discrepancies between individual and group ratings. Group rating can be unpredictable.
- Many reference points are possible when grading research applications and not all of them are explicitly stated. Examples of reference points include previous ratings of research proposals from the applicant, top quality proposals within the country, top quality proposals on an international level. Depending on **the choice of reference point** the same proposal can be graded very differently. The higher the frequency of inferior and the lower the number of superior applications, the more positive the grading will be.
- Is the evaluator reporting an evaluation of a research proposal and nothing else? Or does he or she also want to achieve something with his or her rating besides just reporting an evaluation, such as **helping, encouraging, demonstrating** his or her expertise or fairness, express his or her values or (in the worst case scenario) **stopping competitors**.

Monitoring a scale

According to Professor Elisabeth Svensson[9], from the Swedish Business School/Statistics at Örebro University, the use of rating scales in peer review of research generates ordered categorical data, also called ordinal data. Therefore care should be exercised in their analysis. For example, "the arithmetic mean is not a proper statistic for an ordinal scale, although it is often used in averaging such ordinal values as scores on tests and grades in courses". This means that rank-based statistical methods, such as calculating median score, quartiles and other centiles are appropriate for description.

[8] Guilford , JP (1954). Psychometric methods. New York: McGraw-Hill, 1954.

[9] Professor Svensson is one of very few statisticians with rating scale statistics as a research field. She has developed statistical methods for evaluation of data from scale assessments. These are applicable to evaluation of quality of ratings and of scales, but also to evaluation of change.

The Role of the Scientific and Grants Committee (SGC)

What is this about … ?

As we progress with the new IFS Strategy 2011-2010, our scientific and granting policy framework aims to support individual and collaborative research and to contribute innovation through the research supported by IFS.

In the IFS statutes it states that 'The Scientific and Grants Committee shall advise the Board on scientific and granting policy matters'.The SGC has not been constituted for 5 years and it last met in May 2008.

The question before us is: Is there a role for a Scientific and Grants Committee in IFS? If so, what should that role be? Perhaps it could be constituted in a new way, as a high-level 'think tank' drawn from influential 'others' to advise the Board of Trustees on external science policy issues.

What is the background ... ?

1. The current approach

The SGC was established in the 1994 Statutes as a sub-committee of the Board of Trustees (BOT) to (i) advise the Board on scientific and granting policy matters and to (ii) recommend the approval of research grants. The SGC is composed of two members of the BOT and one Scientific Adviser from each of the (then) six Scientific Advisory Committees (SACs).

In its first few years, the SGC met twice a year and discussed a wide range of topics. To some extent these were topics which the BOT had been discussing for some time, without reaching any firm conclusions. The recommendations made to the BOT are listed in Appendix A.

The role of the SGC has changed since it was first introduced. In 1999, having dealt with many of the issues that the BOT had asked it to discuss, the SGC decided that it did not have enough issues to justify two meetings a year, and decided instead to meet once a year. In 2001, the approval of grants moved from the BOT to the Director. Recommendations regarding the approval of grants were no longer made by the SGC. It was also decided that the SGC would no longer make recommendations regarding the IFS Silver Jubilee and IFS Danida Awards. The IFS Statutes were revised in 2002 and the standing committees are referred to in Article F (see box below).

IFS Statutes 2002
Article F: F.2 Scientific and Grants Committee

2.1 The Scientific and Grants Committee shall be composed of two Trustees, a number of independent Scientific Advisers (not less than four) representatives of the IFS Research Areas and the Director.
2.2 The members of the Scientific and Grants Committee are appointed by the Board for a period of two years and are eligible for re-appointment. The Scientific Advisers are appointed from among candidates proposed by the IFS Scientific Advisory Committees as referred to in Article H. The Director is an ex-officio, non-voting member of the Committee.
2.3 The Scientific and Grants Committee shall advise the Board on scientific and granting policy matters.
2.4 The Scientific and Grants Committee shall normally meet at least once a year.

Procedures related to the SGC were to be discussed at EC meeting in 2009 but *due to the lack of appropriate time* this was abandoned. The Secretariat informed that no issues had been raised by the SAC members that would require an SGC meeting. The EC therefore agreed that no SGC meeting would be held in 2009. The SGC has not been constituted for 5 years and it last met in May 2008.

2. The objectives

Given the world's commitment to accelerating progress to achieve the eradication of extreme poverty and hunger, the crises in food, water and energy that confront humanity today, and the spectre of climate change, biodiversity loss and environmental degradation, planners and funders have to invest in the potential of science to address the legacy left by the recent stewardship of the world's biological and water resources. In this context, it is more crucial now than ever before that IFS plays its role in granting and building the capability of those developing country scientists embarking on a research career. The scientists of tomorrow must contribute to securing affordable food, water and energy to a rising population, where their scope for action is constrained by the urgent challenge of environmental sustainability.

As we progress with the new IFS Strategy 2011-2020 our scientific and granting policy framework aims to support individual and collaborative research and to contribute innovation through the research supported by IFS (see Figure 1 below).

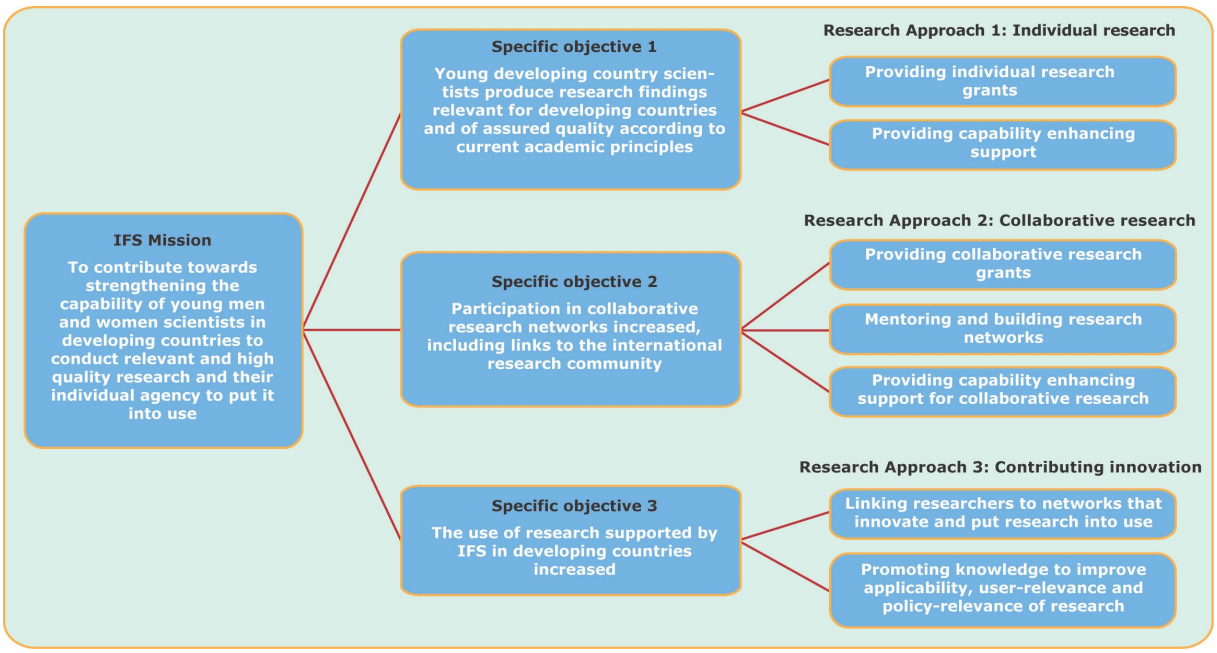

Figure 1: IFS Approach to Empowering Early-career Scientists

Applicants for IFS support may submit their proposals for research grants through three research areas:

- **Sustainable Natural Resources Management** (including but not limited to: research on biodiversity; forestry; natural products, renewable energy and climate change)
- **Water and Aquatic Resources** (including but not limited to: water resources research; all aspects of research on freshwater, brackish and marine aquatic organisms and their environments)
- **Food Production, Food Security and Nutrition** (including but not limited to: research on food production; animal production; crop science including underutilized crops; food science, nutrition and food security issues)

These areas are meant to facilitate the applicant's identification of an appropriate frame for their submissions. The areas have no substantial boundaries among them, and cross-cutting research topics will be encouraged. IFS will further welcome research with a human rights perspective, especially as regards economic, social and cultural rights including the rights to food, water and health, as well as issues of governance.

Our scientific and granting objectives are therefore well developed within this framework of three approaches and three research areas.

3. The challenge

We have a standing committee within the statutes of IFS that has not operated for five years. During this period our strategic approach to science and granting has changed as outlined above. Our challenge is to decide:

- Is there a role for a Scientific and Grants Committee in IFS?
- If so, what should that role be?

Appendix A
Recommendations of the SGC to the BOT

1994W

- Spanish should not be introduced as a third IFS language
- No change of eligibility criteria for Asian republics of the former Soviet Union
- The maximum number of IFS King Baudouin Awards to be given per year

1995S

- New eligibility criteria for Chinese applicants (below 30 with at least an MSc)
- Procedures for pre-screening
- Pro-rata allocation of budgets to Research Areas based on number of applications and number of active grantees

1995W

- Country eligibility criteria and country phasing out procedure
- Criteria to be used for assessing grant applications when funds are short
- Balance between grants and supporting services to be kept at 2:1

1996S

- Introduction of dual grants for a trial period (USD 18,000 for two researchers)
- Retaining maximum amount of research grant at USD 12,000
- Not to introduce honorary grants (notional awards)
- More help for promising candidates from Sub-Saharan Africa (SSA)

1996W

- Rules and procedures for the IFS Danida Award
- Introduction of the IFS Silver Jubilee Award
- To open IFS programme to all young scientists in South Africa meeting the formal criteria
- Additional effort to encourage submission of new application from SSA and support for resubmission of failed applications from the region

1997S

- Secretariat be open to receiving and approving participatory research proposals
- Procedures for dealing with cases of plagiarism
- Procedures for selecting candidates for the Sven Brohult Award

1997W

- Retaining maximum amount of research grant at USD 12,000
- Continuation of eligibility criteria for Chinese applicants
- Composition, membership, and turnover of SACs should be taken up
- Criteria for Final Reports
- External funding for workshops

1998S

- Acceptance of a logical framework for the preparatory phase of the impact assessment system
- Changes to IFS documents to cover legal and ethical issues
- Scientific Advisers to sign confidentially agreements
- IFS Secretariat develop some capacity to advise grantees and their institutions on appropriate institutions or individuals to turn to regarding IPR issues

1998W

- Due to shortage of funds, average value of the research grants to be USD 10,000

- Percentage of IFS budget allocated for grants be kept above 50% and possibly increased
- Exchange of Scientific Advisers between SACs
- Priority be given to the database upgrade as the essential basis for any evaluation programme
- Support to research management training in Central Africa

1999S

- Information be sent out on phasing-out of Uruguay and Argentina
- Employees at CG Centres or regional organisations receiving significant international core funding not eligible to receive IFS grants
- Revision of application evaluation score sheets
- The External Evaluation should start only once the database is operational and the MESIA project is more advanced
- Renewal application forms be changed to cover legal and ethical issues
- Guidelines for producing IFS publications
- The SGC should only meet once a year

2000S

- Increase maximum number of IFS Silver Jubilee Awards given each year from 8 to 12
- MESIA should analyse whether there is a move away from applied to basic research proposals being submitted to IFS
- Awarding certificates upon successful completion of IFS projects be explored
- Inventory of European MSc/PhD courses attended by significant numbers of students from developing countries
- Pro rata allocation of funds to SACs should continue
- Agreement with CABI to carry out literature searches should not be renewed
- Secretariat consider how to link socio-economic research and natural science research
- Scope of the Research Areas be considered and possible name changes made
- Information material in Spanish to be explored
- Dual Grants scheme should not continue but alternative proposals be made
- Advisers be approached to assist with recruitment and assist with the preparation of applications
- IFS Website be optimised and elements of travel kit be made available in electronic format
- Issue of eligibility of Chinese scientists be re-examine d in 2 years

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- Amended mission statement
- Forms to assess proposals be improved and brought in line with each other
- In order to illustrate the range of research categories with Research Areas, lists of key areas be prepared
- Procedures be developed for more time- and cost-effective handling of applications that would not compromise the quality of the reviewing process
- The SGC continues to exist and meets once a year

Assessment Workshop Summary for Wrap-up Meeting

The purpose of the wrap-up meeting is to understand the outcome of the workshop and to consider ways of moving forward with the proposal assessment process. Modifications were made to this summary document during the wrap-up meeting, and its purpose is now to share with people who will be further involved with the modification of the IFS proposal assessment process.

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1. On assessing proposals within the three research areas

Common thinking

- The expectations of all IFS's constituencies need to be consistently considered and reflected in all its activities. These would certainly include applicants and grantees, funding and academic partners, whose needs would be considered in balance with the organization's other constituencies, including development partners.
- IFS's current process for assessing proposals works well, but may need to be modified to support the new strategy and to benefit from continuous improvements.
- The descriptions of the three research areas need to be clarified so that applicants are able to appropriately locate themselves and their research among them, and so that it is clear that different social sciences may be relevant and needed in all areas.
- The process of pre-screening of applications needs to be reconsidered in the light of changes in the assessment process.
- The external review step needs to be reviewed and improved, with SAC members playing a part in identifying reviewers.
- SACs are a key element in the proposal assessment process, and their role may be reconsidered in the light of changes in the assessment process, including:
    - The composition of SACs should be more flexible in response to applicants' research projects.
    - SAC members should be appointed for fixed periods (perhaps four years renewable for another four years), while ensuring that a core membership provides continuity of expertise and *modus operandi*.

Forward thinking

- Automate the process, with, e.g., on-line applications, external reviewer invitation (first the abstract, then give on-line access to application if accepted), monitoring and reminding for reviews and reports, up-loading of publications.
- If their meetings were held concurrently, SAC composition could be flexible and dynamic to share expertise among them as required. They could also be juxtaposed with gatherings of local grantees or alumni, or events aimed at periodic review of the proposal assessment process.
- Different social sciences would cut across the three research areas and SACs could be constituted with relevant advisers.
- Accept revised applications through an intermediate process so that applicants do not have to wait for too long a time.

Unresolved matters

- How proposals received within the three research areas will be assessed within the scientific discipline they represent
- The number of SACs, and how they will be constituted and administered

Follow-up actions

- Revise *The Areas of Research Funded by the IFS* document to more clearly explain the rationale behind the three areas and how different social sciences may be relevant and needed in all areas
- Update key word information on SAC members and external reviewers in the IFS database

2. On modifying the assessment system to be both qualitative and quantitative

Common thinking

- The qualitative feedback provided to applicants on their proposals is invaluable and at the heart of IFS's engagement with early-career scientists.
- A quantitative element in the assessment system, i.e., scoring, will provide a triage mechanism. It would also aim to introduce more consistency in proposal assessment across the SACs and could provide necessary IFS-wide information at the director's decision level of project funding.
- A scoring system needs to be simple with clear descriptors.
- Consideration needs to be given to the parts of the application to be scored, who does it, at which stage in the process.

Unresolved matters

- What would an assessment system look like with both qualitative and quantitative elements?

Follow-up actions

- Draft a document outlining possible systems, including a scoring scheme and revised proposal evaluation form

3. On the Scientific and Grants Committee (SGC)

The working group recommended, and the assessment workshop commonly thought that:

- the SGC should not be resuscitated, given that it no longer has a purpose in the IFS governance and operational structures, and
- another layer of governance or operation not be added until a need becomes apparent, in particular in the context of the new strategy and a revised proposal assessment process.

Appendix 7: Directional Guidance from IFS Governance for Introducing Scoring IFS Applications

Background

The IFS Strategy 2011-2020 states that: 'The primary focus will be the promotion of excellent science through early career research grants and capability enhancing support to researchers in developing countries'. It goes on to specify that 'Applications for individual IFS grant support will be selected on merit'.

The key objectives of the assessment of IFS research grant applications are:

- **'To provide detailed feedback to unsuccessful applicants'**.
- **'To specify that applications are of an acceptable quality**', we must therefore identify those which are not accepted.
- '**To support the most promising early-career scientists in the developing world**', we must therefore identify 'the most promising applications' from eligible scientists.
- **'To be able to select all the applications that we are able to afford to fund**'. IFS receive more applications than it has funds available. We must therefore select the most promising. If the quantum of funds available to us increases, we must be able to identify those additional applications we could also fund, or if it decreases we must be able to identify those we are unable to fund.

Comprehensive pre-screening and assessment of applications is an important part of the work of IFS and aims to ensure that we fund high quality research. It also allows us to provide detailed feedback to unsuccessful applicants, often equipping them with the information that can help them to write a winning application. This emphasis on assessment and feedback is highly valued [cf. the most recent (2012) external evaluation of IFS[10])] and **is not something we are looking to change**. **However**:

1. **The new IFS Strategy 2011-2020 includes agreed changes** which impact the previous assessment approach, which are:

- The former designation of 70% of funds to countries deemed to have poor scientific infrastructure is now superseded by the new poverty-focussed country eligibility.
- The prioritization of women candidates at '(relatively) advanced age'[11] through the allocation of 'remaining funds' at the director's decision level, is improved and superseded by the new eligibility criteria that applies differential age eligibility for women and men from the outset.
- The former 8 administrative research areas (based on scientific disciplines) have been replaced with 3 new overarching research areas.

2. **There are further calls for change to the previous assessment system**, from:

- The academic donors to IFS (through the key recommendation of Donor Group 40, November 2012) request IFS **to clearly indicate that our selection criteria for grantees and projects correspond to the standards of research funding institutions**[12].

[10] Ian Christoplos and Johanna Bergman-Lodin (2012) External Evaluation of IFS Indevelop.
[11] According to the 2006-2007 IFS SACSEC Discussion Paper.
[12] 'Members of the DG are requested to explore possibilities of increased financial support by research funding institutions like national academies, research foundations etc. Preconditions for such commitments are, however, a clear indication by IFS that its selection criteria for grantees and projects correspond to the standards of those research funding institutions. IFS should advertise its selection criteria on its website so that its high and competitive standards are visible and transparent.' 40th Donor Group Meeting Final Conclusion, November 2012.

- The IFS Board of Trustees (BOT) (at BOT 36 in November 2007) endorsed the SACSEC[13] meeting recommendations on assessment of applications and associated protocols as a 'living document' that should evolve, and agreed **to debate further a clear, understandable and fair system of granting decisions**.

To achieve these changes to our assessment approach, and in common with other research councils, **we will introduce a quantitative element to assessment**, to complement and not replace the qualitative narrative.

Introducing a Quantitative Element to Assessment

The revised assessment system for research applications will aim to incentivise comprehensive, merit-based assessment against common reference points. For consistency in assessment, the 'quality assessment' and the 'funding allocation' decisions within IFS will be separated.

Scoring of applications will be introduced at two levels within the assessment system: **scoring completed by External Reviewers** and passed to SACs, and **scoring completed by SACs** and passed to the director's decision stage. The latter will permit IFS to organise all the applications into ranked order.

Applications will no longer be discussed in eight separate SACs and the 'acceptable applications', will no longer be rated A1 or A2, as judged by SACs and will no longer be provided in ranked order within a research area or scientific discipline. Instead each application will receive from the SAC a narrative report as well as an individual score.

Scores have the advantage over ranks that they are numerically meaningful. Differences between scores given to different applications against common reference points show the strength of the preference for an application. Fully open scoring, where each item to be scored can be given any value within a particular range is the most flexible since it leads to observations that are independent of each other, a requirement for most simple statistical analysis procedures. Assembling all application scores received in a call, and their associated narrative assessment, then provides a ranking of the applications (in order of their score) with the associated narrative (i.e., reviewer and SAC comments about each application) to enable close ranked or tied rank applications to be distinguished from one another.

The introduction of such a rating system, to complement and not to replace qualitative assessment, and the subsequent ranking of applications across IFS, rather than within administrative areas, then allows a transparent set of information to guide IFS to make the corresponding granting decisions against the quantum of research capital available to it. It also provides a potential mechanism to focus most discussions, around those applications that require most debate, i.e., to prioritise detailed qualitative assessment of those applications where:

- There are wide differences amongst advisors assessments at the SAC level;
- There is a need to distinguish between those with close ranks or tied ranks at the director's decision level; and,
- There is a need to adjust and determine where amongst the hierarchy of assessed applications at the director's decision level the final funding cut-off point will lie.

[13] In 2006 SAC representatives (from Forestry, Aquaculture, Social Sciences, Animal Production and Crop Production) proposed that the SACs, through their appointed representatives, meet at one time with all of the respective Programme Administrators and other Secretariat personnel to develop consensus on procedures used for assessment and prioritization of research grant applications at IFS. This meeting was referred to as SACSEC and took place on 25-26 January 2007.

Learning from best practice in quality assessment

IFS is not unique in facing the challenge to assess varied applications for research funding. We can therefore learn from the best practises of others. In January 2011 the paper, QUALITY ASSESSMENT IN PEER REVIEW[14] emerged from a Swedish Research Council seminar involving the Swedish Research Council (SRC) (over 5,000 applications annually) (including the fields of Humanities and Social Sciences, Medicine, Natural and Engineering Sciences, Educational Science, and Research Infrastructure) and the US National Institutes of Health (NIH) (over 100,000 applications annually), the Research Council of Norway (RCN), (over 5,000 applications annually), the Academy of Finland, the country's main research funding organisation (around 4,200 applications per year). It provides some useful learning.

The use of rating scales

The first learning is that rating scales are commonly used. All the research councils referenced above use rating scales as well as narrative assessment. In addition:

- We all rate things and experiences all the time. In the academic world as well as in everyday life, institutionalised grading has been used for a long time (rewards in relation to merit, grading of social groups, school grades, grading in sports and music competitions etc.).
- As established in 1951 by Stanley Smith Stevens[15] "Measurement is the assignment of numerals to objects or events according to rules."
- Measurement "consists of rules for assigning symbols to objects so as to represent quantities of attributes numerically (scaling).
- The best scales usually contain definitions of individual items and cues (a short narrative explanation) for the different scores.

Designing a scale

A 1956 article by George Miller[16] concluded that **the optimal number of response categories** in a rating scale is seven, plus minus two. Seven is the perfect amount that people can distinguish between and keep apart.

According to Marie Åsberg from the Department of Clinical Neuroscience at Karolinska Institutet, when constructing **definitions and cues in rating scales** it is good practise to consider the following:

- **Clarity**: definitions should be simple, unambiguous, and short.
- **Relevance**: must be of cue to item.
- **Precision**: cue must exist in correct rank on the rating scale.
- **Variety**: cues must not contain the same wording.
- **Objectivity**: ethical or social evaluation must be avoided.
- **Uniqueness**: avoid general terms e.g. good, fair, poor.

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[14] Quality Assessment in Peer Review. A Swedish Research Council seminar. Vetenskapsrådet 1:2011. ISBN 978-91-7307-190-1

[15] Mathematics, measurement, and psychophysics. Stevens, S. S. In Stevens, S. S. (Ed), (1951). Handbook of experimental psychology. , (pp. 1-49). Oxford, England: Wiley, xi, 1436 pp.

[16] A famous 1956 paper by George A. Miller, *The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information*. At a time when information theory was beginning to be applied in psychology, Miller observed that some human cognitive tasks fit the model of a "channel capacity," characterized by a roughly constant capacity in bits, but short-term memory did not. A variety of studies could be summarized by saying that short-term memory had a capacity of about "seven plus-or-minus two" chunks.

There are also a number of **classic rating errors** that have been explained, and one should be aware of and aim to avoid. According to J P Guilford (1954)[17] these are:

- **The Error of Leniency** – risking bias due to existing relationship or knowledge (colleagues etc.)
- **The Error of Central Tendency** – leaning towards the middle of the rating scale.
- **The Halo Effect** – when the expert has a general impression of something and lets this affect the rating.
- **A Logical Error** – experts making unconscious errors due to their own logic, that two things belong together (such as physics/mathematics).
- **A Contrast Error** – such errors are based on the expert's own characteristics, based on themselves. If the expert is aware of this, they can avoid making the mistake, which is an error in itself.
- **A Proximity Error** – when items are closely related or close to each other, they tend to colour each other and this can open for errors.

Using a scale

According to Professor Marie Åsberg there are a number of points to be aware of when we use scales:

- The afore-mentioned 'halo effect', when the expert has a general impression of something and lets this affect the rating, is **very strong. Preconceived ideas** have an overall value when influencing gradings of specific aspects.
- **Groups often seek coherence** so there may be discrepancies between individual and group ratings. Group rating can be unpredictable.
- Many reference points are possible when grading research applications and not all of them are explicitly stated. Examples of reference points include previous ratings of research proposals from the applicant, top quality proposals within the country, top quality proposals on an international level. Depending on **the choice of reference point** the same proposal can be graded very differently. The higher the frequency of inferior and the lower the number of superior applications, the more positive the grading will be.
- Is the evaluator reporting an evaluation of a research proposal and nothing else? Or does he or she also want to achieve something with his or her rating besides just reporting an evaluation, such as **helping, encouraging, demonstrating** his or her expertise or fairness, express his or her values or (in the worst case scenario) **stopping competitors**.

Monitoring a scale

According to Professor Elisabeth Svensson[18], from the Swedish Business School/Statistics at Örebro University, the use of rating scales in peer review of research generates ordered categorical data, also called ordinal data. Therefore care should be exercised in their analysis. For example, "the arithmetic mean is not a proper statistic for an ordinal scale, although it is often used in averaging such ordinal values as scores on tests and grades in courses". This means that rank-based statistical methods, such as calculating median score, quartiles and other centiles are appropriate for description.

In the light of the above, the director will lead a scoring sub-group, to complement the Assessment Working Group. A scoring template will be developed and trialled based on a seven point Likart scale, with cues to characterize each level of the scale for an agreed range of categories and

[17] Guilford , JP (1954). Psychometric methods. New York: McGraw-Hill, 1954.
[18] Professor Svensson is one of very few statisticians with rating scale statistics as a research field. She has developed statistical methods for evaluation of data from scale assessments. These are applicable to evaluation of quality of ratings and of scales, but also to evaluation of change.

weightings. IFS will investigate the use of Survey Monkey software to which it already holds a subscription, in order to share the rating and collect, collate and present the findings.