



INTERNATIONAL
FOUNDATION FOR
SCIENCE

INVESTING IN FUTURE SCIENTISTS

IFS Strategy 2021-2030



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Acronyms

ASEAN	Association of Southeast Asian Nations
AU	African Union
BELSPO	Belgian Federal Science Policy Office
BoT	Board of Trustees
CGIAR	Consultative Group for International Agricultural Research
COMSTECH	Ministerial Standing Committee on Scientific and Technological Cooperation of the OIC (Organisation of Islamic Cooperation)
DFG	Deutsche Forschungsgemeinschaft
DFID	Department for International Development
ExCo	Executive Committee
EU	European Union
GDP	Gross Domestic Product
ICT	Information and Communications Technology
IFS	International Foundation for Science
IRD	Institut de Recherche pour le Développement
LLMIC	Low- and Lower-Middle-Income Country
OECD	Organisation for Economic Co-operation and Development
OPCW	Organisation for the Prohibition of Chemical Weapons
R&D	Research and Development
SAC	Scientific Advisory Committee
SDGs	Sustainable Development Goals
Sida	Swedish International Development Cooperation Agency
SNSF	Swiss National Science Foundation
STI	Science, Technology and Innovation
UN	United Nations

Introduction

The global population is growing at a rate of just over 1% per annum and is expected to exceed 8.5 billion by 2030. Among the many challenges our expanding global population faces are those of poverty, inequality, climate change, environmental degradation, dwindling water resources, employment, conflict and injustice¹. These problems are best addressed through evidence-based development.

Science is a universal public good that helps lay the foundation for a sustainable world. There is a need to increase science literacy and capacity at all levels, especially in those parts of the world where there remains a poor appreciation of the benefits of science². Low- and Lower-Middle-Income Country (LLMIC) scientists must be able to fully participate in the generation of the science, technology and innovation (STI), and supporting policies, needed to eliminate poverty and hunger, so that no one is left behind in their own countries and beyond. Qualified women and men researchers who are capable of contributing to the base of scientific evidence are essential to solving the world's problems.

The International Foundation for Science (IFS) was established in 1972 by Academies of Sciences from a dozen countries around the world as an independent, globally operating, fundraising-financed foundation (see Box A). IFS has a decades-long track record of contributing to and strengthening the research capacity of more than 6000 young scientists in more than 100 countries to conduct high-quality research on terrestrial and aquatic natural resources, their conservation, management and sustainable use, and food and nutrition security, including relevant social and economic aspects. These align well with priority global issues.

IFS's 2021–2030 Strategy builds on its experience and on the previous ten-year strategy³. It also takes account of the conclusions and recommendations from a recent independent evaluation of IFS commissioned by the Swedish International Development Cooperation Agency (Sida), the outcomes from a structured process of consultations, and a survey of IFS alumni held during 2018 and 2019^{4,5}.

The Strategy represents an evolution in IFS's approach to enhancing research capacity, driven by changes in the contemporary context (see Box B). While IFS continues to emphasise the quality and development relevance of the research it supports, the 2021–2030 Strategy sets out the case for increased targeting of resources on the support of promising early career scientists as essential to addressing national and global challenges.

About IFS

BOX A

IFS was founded in 1972 as a non-governmental organisation in Sweden. Its establishment was initiated after the 1965 Nobel Prize-winning Pugwash Conference in Venice, in order to foster original research and scientific growth within LLMICs.

IFS is a global organisation that is supported by a multicultural Secretariat with eleven staff (nine women and two men) who come from eight countries around the world.

IFS is governed by an international Board of Trustees that has representation from all regions in which it operates, and has a membership of 92 scientific academies, three-quarters of which are located in LLMICs. The IFS Secretariat is located in Stockholm, Sweden.

Our core values are:

- Trust and integrity
- Transparency
- Equity
- Empowerment, and
- Mutual respect.

IFS grants allow early career scientists to purchase equipment, consumables and scientific literature. Additional grants are available to attend conferences and to cover open-access publication costs.

IFS supports gender equality and recognises the need to increase the diversity of underrepresented groups in science. IFS has developed a gender strategy, implemented as funding allows (see Annex 3).

The IFS communications strategy (Annex 6) aims to strengthen the IFS brand and share impact stories through IFS grantees, scientific advisors, partners and donors.



Contemporary Context

It is increasingly apparent that humankind is profoundly changing the planet, creating numerous and pre-scient problems. We live in a world that is more economically integrated and unequal than ever, and increasingly affected by the profound challenges posed by climate and environmental change and the imperatives of providing a burgeoning global population with food, water, shelter, energy and livelihoods. While relative poverty and hunger are decreasing, the absolute numbers of those needing to be lifted out of poverty and hunger are increasing even without the full impact of climate change being felt.

Global commitments to eradicate poverty highlight the role of Science, Technology and Innovation (STI) in addressing key problems.

Many regional organisations, including the African Union (AU)* and the Association of Southeast Asian Nations (ASEAN)**, as well as the International Science Council (ISC)*** and the Organisation for Economic Co-operation and Development (OECD)****, have formulated action plans to address pertinent global issues. In addition, a series of global initiatives (such as the Sendai Framework for Disaster Risk Reduction, United Nations Framework Convention on

Climate Change, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, and the United Nations Convention on Biological Diversity) emphasise a commitment to increased investment in STI to ensure evidence-based, sustainable and equitable management of our planet's resources.

The positive potential outcomes of STI development are often not fully realised by policy makers and politicians, causing budgetary constraints that impede investment. Although higher education has expanded in many of the regions supported by IFS, especially in Africa, research capacity remains weak.

The world in which IFS has been working over the past 50 years has changed radically: the global population has more than doubled and, while the overall numbers of poor and hungry people have been decreasing, the downward trend is reducing. At the same time, the imperative of developing carbon-neutral economies has become apparent. IFS must therefore focus on its strengths, adding value to global initiatives that address problems of poverty, hunger and climate change, by enhancing the research capacity of LLMIC scientists.

* African Union Commission (2015). Agenda 2063: The Africa We Want. African Union Commission, Addis Ababa; ** The ASEAN Secretariat (2017). ASEAN Plan of Action on Science, Technology and Innovation (APASTI) 2016–2025. The ASEAN Secretariat, Jakarta; *** International Science Council (2019). Advancing Science as a Global Public Good – Science Action Plan: 2019–2021. International Science Council, Paris; **** OECD (2018). OECD Science, Technology and Innovation Outlook 2018: Adapting to Technological and Societal Disruption. OECD Publishing, Paris.

The IFS Vision

IFS's Strategy, *Investing in Future Scientists*, will guide its efforts from 2021 to 2030. Building on five decades of experience, the Strategy reaffirms the organisation's Vision of LLMIC scientists assuming ownership and development of local and regional research agendas and contributing to a global research community committed to supporting sustainable development and building science literacy⁶.

Research capacity, science literacy and capacity for national evidence-based development remain low in LLMICs despite rapid expansion of the tertiary education sector.⁷ Many early career scientists leave their home countries in search of better opportunities and LLMICs are unable to fully participate in the setting of global research agendas. These are constraints towards reducing poverty and hunger and tackling climate change in a sustainable manner⁸. LLMICs are on the front line of these issues and are thus especially well-qualified to judge the value and validity of research and innovations that are focussed on developing solutions⁹.

While there are many examples where research has been put into use by the early career scientists IFS has supported¹⁰, the comparatively small levels of funding provided make a modest contribution to directly addressing national and global problems. Rather, IFS aims to enhance the research capacity of promising early career scientists as the most important contribution the organisation can make in addressing local and regional aspects of global challenges. IFS supports research capacity-enhancement in key issues currently confronting our planet: the conservation and sustainable use of natural resources, both terrestrial and aquatic, and in food security and nutrition, including social and economic aspects¹¹.

With its focus on early career scientists, IFS occupies a unique place in the science capacity-enhancing landscape¹² that is aligned with regional organisational visions for the role of STI¹³.

The IFS Mission: Realising the Vision

3.1 Introduction

IFS's Theory of Change is that investing in research and complementary skills of promising early career LLMIC scientists builds research capacity, thereby helping secure the cadre of LLMIC scientists needed to participate in the generation of the science, technology and innovation (STI) and supporting policies essential to eliminate poverty and hunger.

3.2 Mission Statement

IFS will realize its Vision by enhancing the capacity of early career women and men scientists in LLMICs to acquire the skills needed to conduct research and communicate their results, contribute to science literacy, influence science priority setting, and network and collaborate with the global research community to shape research agendas, both local and global.

The overall objective is to build capacity of early career scientists in LLMICs to conduct relevant research, influence research agendas at local, regional and global levels and increase science literacy. Specific objectives are:

- Generation and dissemination of scientific knowledge by early career LLMIC scientists, and
- Enhanced capacity of early career LLMIC scientists to influence, lead, network, fundraise and put research into use. (See Annex 8 for accompanying Logical Framework.)

3.3 Mission Justification

While global investment in Research and Development (R&D) is increasing, ten countries account for 80% of spending¹⁴. Apart from Central Asia, Sub-Saharan Africa, with 1% of the world's researchers, ranks as having the poorest research performance¹³. Current spending on R&D in the latter region is estimated at only 0.4% of GDP, well below the target of 1% of GDP that the African Union has established as needed to max-

imise Africa's ownership and responsibility for its development path¹⁵. Low levels of R&D investment also occur in most Southeast Asian and Latin American countries¹⁶. Yet it is well established that the return on investment in research is excellent¹⁷.

Research outputs in LLMICs are low and declining¹⁸. Nonetheless, much research conducted in the “Global South” is ‘... scientifically robust, legitimate, important and well-positioned for use’⁹, creating impact in areas as diverse as agriculture, health, nutrition, gender equality (see Box G), democratisation and the environment, as well as in technology transfer to small- and medium-sized enterprises^{9,10}.

The African Union identifies four key areas for investment in STI: (i) infrastructure development, (ii) technical competencies, (iii) innovation and entrepreneurship, and (iv) enabling environment; those of ASEAN are similar¹³. IFS invests in enhancing research capacity on the basis of its Theory of Change, being that this is a prerequisite to addressing the other key areas, including institutional capacity.

IFS focuses on identifying promising early career women and men scientists¹⁹ because it believes it is crucially important to bridge the gap between early career postgraduates, who find it particularly difficult to secure the resources and mentoring required to initiate their research careers, and mature researchers who have established grant acquisition and publishing track records and extensive networking and collaborative research experience. Early career scientists are often neglected by national, regional and international organisations and initiatives that support the development of science research capacity and the generation of scientific knowledge and innovation in LLMICs²⁰.

4

Operationalising the IFS Mission

4.1 IFS's Structured Approach to Research Capacity-enhancing

The development of national cadres of research scientists in LLMICs helps identify and address pressing societal problems and build shared values, including an appreciation of science and its role. Scientists acquire their skills by conducting research in an enabling environment that includes access to resources and mentorship, both of which are in short supply in LLMICs²¹. As scientists gain experience over time in planning, conducting and publishing their research, they establish a reputation in their field. This helps improve their abilities to identify and prioritise research, collaborate with others, develop and lead successful research groups, and influence policy. Scientists who acquire such skills also help empower the institutions in which they work and build science literacy in their home countries.

IFS's Strategy for realising its Vision is to support promising early career scientists through a flexible but structured process centred around securing funding to conduct research in the researchers' home countries, complemented by the provision of capacity-enhancing activities, coordinated by the IFS Secretariat (Figure 1). Monitoring and evaluation is designed to facilitate an evidence-based approach to the on-going development of support for research capacity enhancement (see Section 6).

4.2 IFS's Capacity-enhancing Process

IFS provides tailored research capacity-enhancing support to promising early career scientists centred around the provision of individual Basic Grants and Advanced Grants.

Eligibility is based on education. Applicants must either be enrolled in a PhD programme or have recently – within five years – completed a PhD degree (Annex 2). Applications submitted online in response to annual calls are screened by the IFS Secretariat before being circulated to its

BASIC SKILLS

- Identifying researchable topics
- Grant application
- Planning and conducting research
- Technical research skills
- Methodological development
- Writing and publishing research

PEDAGOGICAL DEVELOPMENT OF RESEARCH SKILLS

ADVANCED SKILLS

- Verbal communication skills
- Putting research into use
- Theory of Change development and reflection
- Building institutional capacity
- Building science literacy
- Collaboration and networking, including participatory research development
- Ability to secure research funds



Figure 1. Developmental pathways (bottom thin green arrow) available to successful applicants to the IFS capacity-enhancing programme, consisting of a Basic Grant (BG) and an Advanced Grant (AG). Numbers indicate grant support and enhancing activity inputs. The pedagogical pathway of research skills development is indicated as a box arrow.

global network of 1400 scientific peers for evaluation. Using the reviews, the thematically-organised Scientific Advisory Committees (SACs) make the final recommendations²².

To secure IFS support, applicants must submit a sound research project application on a self-selected topic that is innovative and/or relevant to her or his local or national development needs. The research proposal must demonstrate knowledge of the subject area, identify knowledge gaps, elaborate testable hypotheses and research objectives, develop a convincing, doable and appropriately costed research plan and research dissemination plans. Proposals must be written in English.

Basic Grant applicants receive feedback from reviewers, scientific advisors and the IFS Secretariat²³. The value of individual capacity support packages is determined by the needs of the grantee and the nature of the research being conducted. Grants (up to US\$15,000 for each²⁴) cover costs of additional manpower, consumables, equipment, literature and travel for field work. Successful applicants receive help with purchasing of equipment and consumables.

Capacity-enhancing activities include training workshops, usually with partners (see Box C), in such topics as science writing, putting research into use, data protection and ethics in research. Support may also be provided to help grantees visit laboratories, attend conferences and present research results. On completion of a Basic Grant, IFS expects clear, documented evidence of development of research and organisational skills (e.g. a strong Project Completion Form; publications in peer reviewed journals).

Advanced Grants (up to US\$20,000) are available to those who have successfully completed a Basic Grant and who are within five years of having completed their PhDs. Their purpose is to support not only further research, thereby strengthening research skills, but also the development of a wider suite of skills essential to the development of a scientist. This includes helping foster an awareness of the role of Information and Communications Technology in society by requiring applicants to elaborate both a Theory of Change and a research-into-use plan in the application form. On completion of an Advanced Grant, IFS seeks evidence of development of skills in networking, collaborative research, web presence, producing media pieces for general audiences, conference presentations, influencing (e.g. involvement in policy development) and science leadership (e.g. membership on science committees, leadership of research teams) (see Figure 1). Where identified by grantees, IFS will also connect successful grantees with advisors who are willing to mentor the grantee in areas such as experimental design, data collection, analysis and interpretation, and publication (see Box D).

Partners*

IFS actively engages with partner organisations that have shared values and possess complementary skills to identify promising early career scientists for capacity-enhancing and to help implement capacity-enhancing activities. Together, IFS improves the quality of its support activities, reaches a wider audience and has a lasting impact, while reducing costs and improving value for money.

IFS has collaborated with a diversity of partners:

Donors: Since 1972, IFS has received funding from many donors with shared interests and values in science and development, including government agencies, private foundations, research councils and private companies.

Collaborative partners: Capacity-enhancing events, such as workshops and seminars, have been delivered together with universities, local research councils or other organisations involved in resource and knowledge transfer, often giving their services in kind. IFS has a number of long-term collaborators who together with IFS commit to support scientists and scientific research in developing economies.

Affiliated organisations: When IFS was established, it was supported by 16 scientific academies called 'member organisations'. Since then, many academies, research councils, universities, government agencies, and others have joined them.

* See also <http://www.ifs.se/partners/>

Resourcing the IFS Mission

The objectives of IFS's resourcing efforts (Annex 7) are to secure sufficient broad-based funding to meet research capacity enhancement demands of promising early career LLMIC scientists as efficiently and effectively as possible. The Strategy aims to secure funds to:

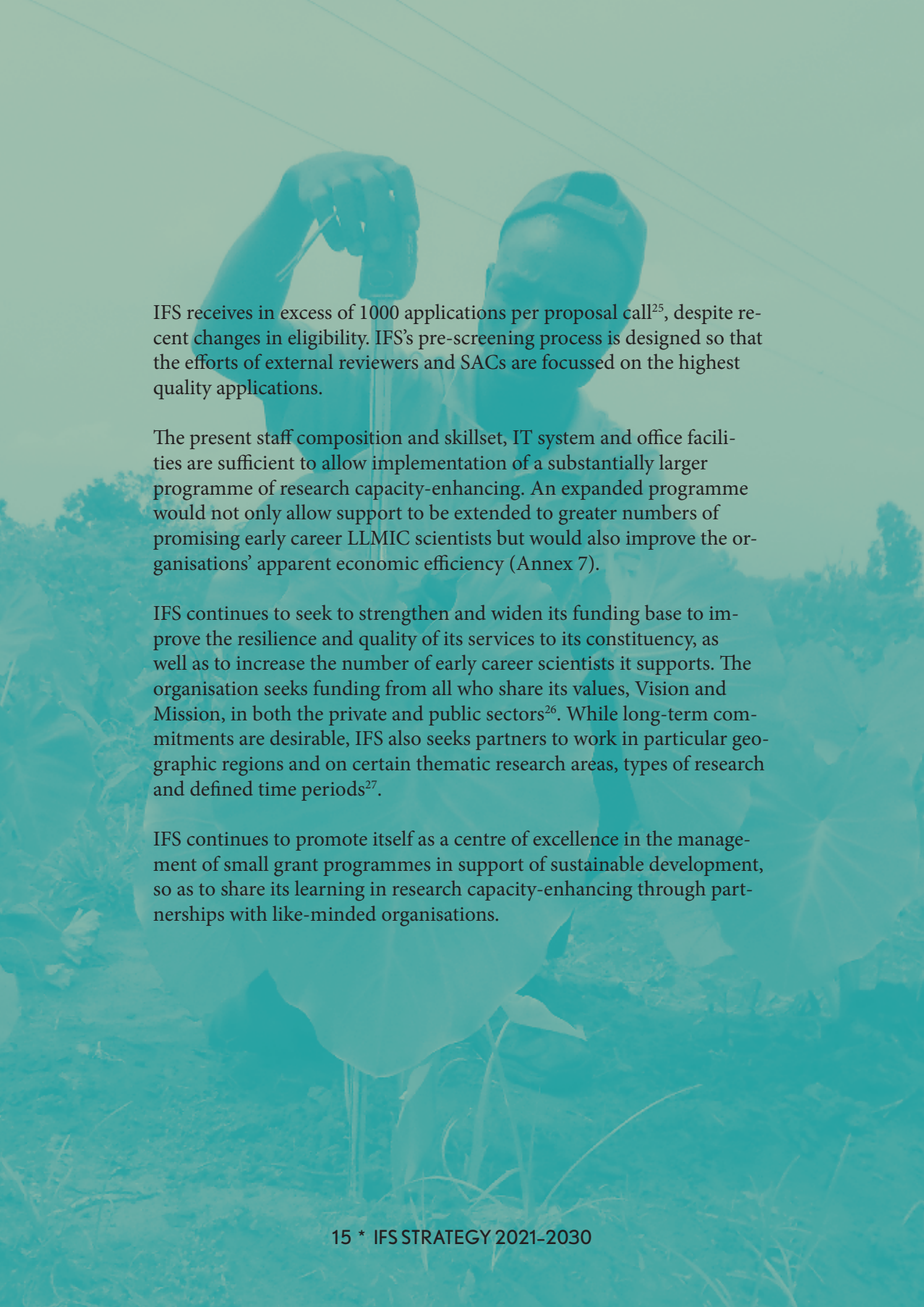
- Make the case for investing in research capacity-enhancing in LLMICs (as summarised in Section 3)
- Present a compelling case for how research capacity can be realised (see Section 3)
- Set out the case for IFS as a key provider (Section 3)
- Present realistic scenarios on support costs in relation to income, and
- Implement a plan to increase and diversify the organisation's funding base.

BOX D

Reviewers, SACs and Mentoring

IFS is supported by an unparalleled global network of scientific advisors dedicated to enhancing the capacity of early career scientists in LLMICs. Our advisors are established scientists who are experts in their fields and who peer-review research grant applications. Many IFS alumni become scientific advisors and join the Scientific Advisory Committees. Advisors also support applicants and grantees in other ways, for example:

- They play a role in the development of grantees through mentorship.
- They provide future opportunities as potential collaborators.
- The grant review process is supported by IFS Scientific Advisory Committees comprising more than 40 international senior scientists. They review and provide detailed feedback for all recommended applications *pro bono* and ensure that IFS grants support high quality research.
- The global network of 1400 advisors continues to grow and IFS is particularly looking to recruit more early career researchers, especially in LLMICs.

A person wearing a white lab coat and a white cap is standing in a field of tall grass. They are holding a test tube in their right hand. The background is a soft-focus field of green grass and some distant trees.

IFS receives in excess of 1000 applications per proposal call²⁵, despite recent changes in eligibility. IFS's pre-screening process is designed so that the efforts of external reviewers and SACs are focussed on the highest quality applications.

The present staff composition and skillset, IT system and office facilities are sufficient to allow implementation of a substantially larger programme of research capacity-enhancing. An expanded programme would not only allow support to be extended to greater numbers of promising early career LLMIC scientists but would also improve the organisations' apparent economic efficiency (Annex 7).

IFS continues to seek to strengthen and widen its funding base to improve the resilience and quality of its services to its constituency, as well as to increase the number of early career scientists it supports. The organisation seeks funding from all who share its values, Vision and Mission, in both the private and public sectors²⁶. While long-term commitments are desirable, IFS also seeks partners to work in particular geographic regions and on certain thematic research areas, types of research and defined time periods²⁷.

IFS continues to promote itself as a centre of excellence in the management of small grant programmes in support of sustainable development, so as to share its learning in research capacity-enhancing through partnerships with like-minded organisations.

6

Measuring Success

IFS's Vision is for LLMIC scientists to fully contribute to a global research community committed to reducing poverty and supporting sustainable development, both nationally and regionally. It monitors realisation of its Vision through a number of output- and outcome-related metrics, as detailed in its Logical Framework (Annex 8):

- Increased numbers of LLMIC early career women and men scientists supported
- Increased support per scientist, in terms of grant support, mentoring (e.g. quantity and quality of contact hours; see Box D) and capacity-enhancing activities (e.g. improved access to online materials, more awardees offered travel grants, more workshops)
- Increased numbers of publications, including in more high-impact journals
- Improved research and research-associated skills, including organisational, communication and interpersonal skills (e.g. scientific networking, collaborative research, web presence, media pieces for non-specialist audiences, conference presentations)
- Greater translation of research into use, through involvement in evidence-based decision-making and uptake of STI by society
- Improvements in science literacy, via the development of research communities, including Alumni Associations (see Box E), and
- Improved career pathways.

The online Project Completion Forms for Basic Grants and Advanced Grants capture early career scientists' own assessment of how their skills have developed as a result of IFS support and facilitate the assessment of their development as researchers by scientific peers (i.e. reviewers and SAC members). Data are analysed to identify the aspects of research grant support and complementary activities that can be strengthened to better support research capacity enhancement and validate the assumptions underpinning the approach.

IFS uses data on scientific publications arising from IFS support as a

Alumni Associations

Many eminent IFS alumni populate the scientific world.

Achievements include:

- Former grant recipients have emerged as science leaders, including ministers of science, chief executives, science board chairs, directors of research organisations.
- IFS alumni include many prize-winning research scientists.
- IFS-funded research has generated and disseminated new scientific knowledge that has been used by other scientists and policy-makers and has been put into practice with wide-reaching and significant impacts for communities, societies and countries. (See the Increasing Use of Research Results section in the 2019 Annual Report).

key performance indicator (see Box F). It also plans to adopt the ORCID (Open Researcher and Contributor ID) system²⁸, in part to help early career scientists raise their research profile and in part to facilitate tracking of IFS-supported research publications and career development beyond the granting period.

The Sida evaluation of IFS demonstrated positive changes in development policies as a result of IFS-supported research in Benin and Vietnam²⁹. IFS argues that policy impacts from research generally are related to the capacity of the researcher to understand, engage and creatively approach issues associated with policy change rather than grant size *per se*. Approaches such as Facilitated Advocacy, which IFS has been pursuing with local colleagues in LLMICs, are demonstrably effective and have relatively low costs³⁰. IFS also collects and shares stories on the success of the promising early career women and men scientists it supports³¹. In addition, IFS regularly reviews institutional risks, consequences and mitigation measures, including those relating to funding support³².

BOX F

Publications

IFS encourages grantees to publish research in high-impact journals and in the past has offered publication grants. IFS recognises the pertinent shift towards open-access. Publications typically emerge in the four years or so following the end of research projects.

Our tracking of published research results of the 229 grantees who were awarded grants in 2014 identified 306 scientific publications in English or French as a direct outcome of the IFS grant. At the time of survey, more than 90 other papers were reported to be in preparation or close to submission.

BOX G

Gender

Global statistics indicate that women are not only unequally represented in science but also less likely than men to be involved in its planning, research, development or application.

The IFS Gender Strategy describes how IFS mainstreams gender in policy and practice with an aim to close the gender gap in IFS grantees and applicants through the implementation of

evidence-based, gender-responsive actions using a regionally-tailored approach, while also addressing universal barriers to women in science.

The objectives will be achieved using a combination of capacity-enhancing activities, through workshops, mentoring programmes and online tools, and through implementing changes in IFS's work processes to promote inclusion.

Endnotes

1. As manifested in the Sustainable Development Goals and the Paris Climate Agreement. <https://sustainabledevelopment.un.org/>; <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>. Accessed 10 April 2020.
2. See, for example, the arguments for scientific literacy promoted by the Chemical Education Exchange (2017), <https://www.chemedx.org/article/accepting-our-role-developing-science-literacy>. Accessed 10 April 2020.
3. IFS Strategy 2011-2020: Working together. http://www.ifs.se/IFS/Documents/Publications/IFS_Strategy2011-2020_2017_WEBB_30Oct.pdf.
4. Walther, P., Bonfoh, P. and Nguyen, H. (2018). Evaluation of the Sida Supported Research Capacity Building Programme at International Foundation for Science. Sweden: NIRAS. <https://www.sida.se/Svenska/publikationer/161381/evaluation-of-the-sida-supported-research-capacity-building-programme-international-foundation-for-science/>.
5. Meeting of IFS SAC and Secretariat, Lund, Sweden, May 2018, to discuss the changing operational environment; Meeting of the IFS Secretariat, SAC and BoT, Stockholm, October 2018, to consider the Vision and Mission of the organisation, programme research areas, eligibility of applicants, application review process, monitoring and evaluation, and Theory of Change, as well as organisational matters (funding, partnerships governance and management); Responses from a questionnaire sent to grantees in selected countries throughout 2019; Inputs from a side meeting held in conjunction with the African Science Day in October; Survey of IFS alumni. <http://www.ifs.se/ifs-publications/ifs-strategy-2021-2030-consultation-documents.html>.
6. The main strategy document is complemented by a series of technical annexes that provide detail on organisational structure and governance; priority and eligibility for IFS support and level of support; gender strategy; IFS science capacity-enhancing programme; thematic research areas; the database and its development; communications strategy; monitoring, evaluating, learning and planning; fundraising and financial planning. <http://www.ifs.se/ifs-publications/ifs-strategy-2021-2030-annex/>.
7. Beaudry, C., Mouton, J. and Prozesky, H. (eds) (2018). The Next Generation of Scientists in Africa. Cape Town, South Africa: African Minds. <http://www.africanminds.co.za/wp-content/uploads/2018/10/AM-The-Next-Generation-of-Scientists-in-Africa-TEXT-WEB-11112018-1.pdf>.
8. See also Article 27 of the Declaration of Human Rights (<http://www.unesco.org/>)

- culture/culture-sector-knowledge-management-tools/10_Info%20Sheet_Right%20to%20Culture.pdf) and Article 15 of the International Covenant on Economic, Social and Cultural Rights. <https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx>.
9. Lebel, I. and McLean, R. (2018). A better measure of research from the global South. *Nature* 559: 23-26. doi: 10.1038/d41586-018-05581-4.
 10. IFS impact case studies documents. <http://www.ifs.se/ifs-publications/ifs-strategy-2021-2030-consultation-documents.html>. See also note 5, Walther et al. (2018).
 11. IFS supports three thematic research clusters: (i) biological resources in terrestrial systems, (ii) water and aquatic resources and (iii) food security, dietary diversity and healthy livelihoods.
 12. Analysis of the funding landscape was underway by IFS staff at the time of drafting the Strategy (Sjölund J., personal communication, November 2019).
 13. AU Vision: 'An integrated, prosperous and peaceful Africa driven and managed by its own citizens and representing a dynamic force in the international arena.' In: Agenda 2063. The Africa We Want. Addis Abeba, Ethiopia: African Union Commission (2015). <https://www.un.org/en/africa/osaa/pdf/au/agenda2063.pdf>; ASEAN Vision: 'A Science, Technology and Innovation-enabled ASEAN which is innovative, competitive, vibrant, sustainable and economically integrated.' In: ASEAN Plan of Action on Science, Technology and Innovation (APASTI) 2016-2025 – Implementation Plan. <https://asean.org/wp-content/uploads/2017/10/02-APASTI-2016-2025-Implementation-Plan-FINAL.pdf>. ASEAN (2017).
 14. UNESCO (2016). How Much Does Your Country Invest in R&D? UNESCO Institute for Statistics. <http://uis.unesco.org/apps/visualisations/research-and-development-spending/>. Accessed 10 February 2019.
 15. African Union (2014). Science, Technology and Innovation Strategy for Africa, 2024. https://au.int/sites/default/files/newsevents/workingdocuments/33178-wd-stisa-english_-_final.pdf; See also note 14, ASEAN (2017).
 16. Maslog, C. on SciDevNet (2016). Asia-Pacific Analysis: R&D spending boosts development. <https://www.scidev.net/asia-pacific/r-d/columns/asia-pacific-analysis-r-d-spending-boosts-development.html>; UNESCO (2015). Regional overview: Latin America and the Caribbean. UNESCO Science report, towards 2030. https://en.unesco.org/unesco_science_report/lac and the full UNESCO Science report <https://unesdoc.unesco.org/ark:/48223/pf0000235406/PDF/235406eng.pdf.multi>.
 17. Nin-Pratt, A. and Magalhaes, E. (2018). Revisiting Rates of Return to Agricultural R&D Investment. IFPRI Discussion Paper 01718. Washington: IFPRI. <http://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/132370/file/132581.pdf>. These authors, for example, estimated a six percent return on investment in agricultural research in LLMICs.
 18. AGRA (2018). Africa Agriculture Status Report: Catalyzing Government

- Capacity to Drive Agricultural Transformation (Issue 6). Nairobi, Kenya: Alliance for a Green Revolution in Africa (AGRA), <https://agra.org/wp-content/uploads/2018/10/AASR-2018.pdf>; See also note 8, Beaudry et al. (2018).
19. IFS recognises the many disadvantages that women scientists face and has developed and implemented a Gender Strategy to address these (see Box G).
 20. The assertions here are fully supported by a survey of grantees, as the following quotes make abundantly clear “Persistent disregard for investment in science and technology is retarding national development in [my country] ... the role of science in [my country] is still misunderstood and underestimated, particularly by the government and politicians. The only way to change this is to keep researching, showing results and educating people”. <http://www.ifs.se/ifs-publications/ifs-strategy-2021-2030-consultation-documents.html>.
 21. Nakanjako D., Byakika-Kibwika P., Kintu K, et al. (2011). Mentorship needs at academic institutions in resource-limited settings: A survey at Makerere University College of Health Sciences. *BMC Medical Education* 11: 53. <https://doi.org/10.1186/1472-6920-11-53>.
 22. See Annex 4 for details.
 23. Science literacy of unsuccessful applicants is enhanced not only by learning through doing in terms of developing a research proposal but also through the feedback they receive. The IFS website also continues to develop to improve support to applicants.
 24. Levels of support are annually reviewed by the BoT, which includes representatives of key donors.
 25. During the period 2014-2019.
 26. See Annex 1 for Values Statement.
 27. For example, Francophone African countries (IRD and Francophone West, East and Southern Africa); collaborative research (Carolina MacGillavry Fund, Netherlands; Carnegie Corporation of New York; BELSPO, Belgium).
 28. An ORCID® is a persistent digital identifier that distinguishes individual researchers. Having a unique identifier ensures that the bibliometric data about individuals and their bodies of work are accurate and correctly linked to their researcher profiles. It also improves the visibility of the research. See <https://orcid.org/>.
 29. See note 4, Walther et al. (2018).
 30. Haylor, G. and Savage, W. (eds) (2019). *Facilitated Advocacy for Sustainable Development: An Approach and Its Paradoxes*. Oxford, UK: Routledge.
 31. See IFS Annual Reports. <http://www.ifs.se/ifs-publications/>.
 32. IFS maintains a Risk Register, which elaborates the threats to the organisation and includes risk ownership, the likelihood of each risk occurring, the impact on the organisation and how risks are mitigated.



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