INTERNATIONAL FOUNDATION FOR SCIENCE

THE GLOBAL GOALS For Sustainable Development

IFS STRATEGY 2011–2020

WORKING TOGETHER

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Executive summary

The International Foundation for Science (IFS) was established in the early 1970s 'to address the stultifying conditions under which younger faculty members in the universities of developing countries were attempting to do research'. Since then, IFS has awarded over 8,000 small grants, in more than 105 countries, and built capability of tens of thousands of young developing world researchers.

More than four decades after its conception, the objectives of the International Foundation for Science remain at the heart of the world's efforts towards universal, integrated and transformational development. These are now encompassed in the 2030 Agenda for Sustainable Development; agreed by nearly all the world's nations in September 2015, with 17 goals to shape the future through 2030, backed by 169 detailed targets.

Science, technology and innovation are essential for eradicating poverty and achieving health and well-being, in line with the aspiration contained in the 2030 Agenda for Sustainable Development to "leave no one behind". Therefore in May 2017, a United Nations multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals[1], was held in New York (United Nations E/HLPF/2017/4). It explored the role of science, technology and innovation for achieving options for enhanced poverty eradication, the implications of new agricultural technologies, ensuring healthy lives and promoting well-being, addressing technology needs and gaps, and cooperation priorities, and capacity-building plans. The key conclusions of this High-level Political Forum on Sustainable Development convened under the auspices of the Economic and Social Council included:

- Understanding that science is critical to the agricultural system and is fundamental to eradicating hunger and increasing food security.
- Ensuring that research and development are targeted at national priorities.
- The belief that strengthening collaborative linkages can promote science, technology and innovation in agriculture and food systems.
- Agreeing that greater investment is needed in research and human capacities.
- Developing local research capacities, to help in identifying unaddressed needs, and to develop simple and affordable solutions sensitive to the local context.
- Science, technology and innovation processes should support hands-on learning and other practical educational experiences to inspire interest among future science, technology and innovation practitioners, with capacity-building efforts focused on youth.

Each of these conclusions resonates with the objectives and role of the International Foundation for Science. 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.

1. Including 800 participants representing 90 governments and more than 390 scientists, innovators, technology specialists, entrepreneurs and civil society representatives.

A global conversation amongst IFS stakeholders in 2010, lasting four months engaged with 4,400 people in different ways and provided the opportunity to listen and reflect before setting out this ten-year strategy. The revised mission and the new programme structure presented here reflect today's changing circumstances and opportunities, especially, the role that science plays in society, and the ways in which science and development landscapes are navigated and linked. With the proclamation of the Sustainable Development Goals, IFS held a series of meetings with donors, potential donors and trustees to refine and adjust the strategy.

Through this revised strategy IFS aims to support excellent individual and collaborative research, to build capability of early-career scientists in the developing world, and to contribute innovation to the sustainable management of biological water and energy resources. In particular, to enable young scientists to contribute to a global research community that is reducing poverty and supporting sustainable development.

The primary focus will be the promotion of excellent science through early career research grants and capability enhancing support to researchers in developing countries. However, the interlinked development challenges that face humanity increasingly require scientists to work with each other, as well as with other professions and specialists. Therefore, the 2011–2020 Strategy, Working Together, is, through the phased introduction of a collaborative research approach, also providing support for collaborative research teams, some of which are interdisciplinary, to combine researchers' strengths, expertise, and experience, to address larger topics or a research issues where more than one discipline is required. A major change in our agenda is, not only to aspire to strengthen the capability of those embarking on a research career in the developing world, but also to link young scientists to those who can support their actions to bring about change, in terms of their values and objectives within the scope described for IFS research. In other words, to promote the individual agency of men and women scientists, early in their career in developing countries, to put their science into use.

Resumé en français

La Fondation Internationale pour la Science a été créée dans le début des années 1970 pour les jeunes assistants des universités dans les pays en développement confronté aux difficultés innombrables qu'ils rencontraient pour faire de la recherche. Depuis lors, l'IFS a financé près de 8 000 boursiers, par des soutiens incitatifs dans près de 105 pays, et ainsi contribué à former près de dix mille jeunes chercheurs dans les pays en développement.

Plus de quarante ans après cette initiative, les objectifs de la Fondation Internationale pour la Science restent au cœur des efforts internationaux pour un développement universel, intégré et environnemental. Ces objectifs sont maintenant regroupés dans l'Agenda 2030 du Développement Durable, ratifié par presque toutes les nations du globe en septembre 2015, définissant 17 objectifs pour construire le futur à l'horizon 2030, regroupant 169 cibles détaillées.

La Science, la Technologie et l'Innovation sont essentielles pour faire disparaitre la pauvreté et assurer la santé et le bien être pour tous, en accord avec la priorité de l'Agenda 2030 pour le Développement Durable, de « n'oublier personne ». C'est pourquoi, en mai 2017, s'est tenue une vaste conférence à New York (Nations Unies E/HLPF/2017/4) accueillant de nombreux experts sur la science, les technologies et l'innovation utiles au Développement Durable. Il y a été débattu des rôles de la science, de la technologie et de l'innovation pour réduire la fracture sociale, l'implication des nouvelles technologies agricoles, de l'amélioration de la qualité de vie et du bien-être, de l'état d'avancement des technologies adaptées, ainsi que des priorités de la coopération et du renforcement de potentialités nécessaires. Les principales conclusions de ce forum de haut niveau politique, qui ont été partagées avec le Conseil Economique et Social, portent notamment sur:

1. La science est essentielle à la maitrise des systèmes agricoles et fondamentale pour réduire la faim dans le monde en accroissant la sécurité alimentaire.
2. La recherche et les questions de développement doivent être pilotés par les priorités nationales.
3. Seul, le renforcement des réseaux collaboratifs dynamisera la science, la technologie et l'innovation au service de l'agriculture et de la nutrition.
4. Un investissement plus important est nécessaire dans les capacités humaines et matérielles pour la recherche.
5. Le développement des capacités de recherches nationales est nécessaire à l'identification des questions encore inexplorés, et au développement de solutions simples et adaptées au contexte local.
6. La science, la technologie et l'innovation sont indispensable à l'apprentissage et aux autres formations continues qui rendront la science, la technologie et l'innovation attrractive, en favorisant la formation pratique des jeunes en particulier.

Chacune de ces conclusions est en parfaire concordance avec les objectifs et le rôle de la Fondation Internationale pour la Science. Il est encore plus important aujourd'hui que l'IFS puisse jouer un rôle significatif par ses bourses et leur impact pour les carrières scientifiques des jeunes chercheurs dans les pays en développement. Les scientifiques actuels doivent contribuer à la maitrise de la sécurité alimentaire, de l'eau et de l'énergie pour une population en constante augmentation, dont la liberté d'entreprendre est contrainte par les questions urgentes d'environnement.

En 2010, pendant quatre mois, une large enquête a été réalisée au sein des différents partenaires de l'IFS, regroupant près de 4 400 différentes personnes, pour un travail d'échanges et de réflexion permettant d'établir notre stratégie pour les actuelles dix années. La mission révisée de la fondation et la nouvelle stratégie d'intervention que nous vous présentons aujourd'hui, reflète plus des nouvelles circonstances et opportunités qui placent aujourd'hui la science au cœur des problèmes de société, et les liens entre celle-ci et les problématiques de développement étroitement mêlés. Depuis la proclamation des Objectifs de Développement Durable, l'IFS a tenu de nombreux ateliers avec ses bailleurs, avec les potentiels bailleurs et ses administrateurs pour adapter sa stratégie à ces nouveaux objectifs.

A travers cette stratégie renouvelée, l'IFS entend soutenir l'excellence scientifique des individus et la recherche collaborative, pour la formation des jeunes scientifiques dans les pays en développement, tout en contribuant à la valorisation des ressources durables dans le domaine de l'eau et de l'énergie. A travers l'action de l'IFS, nous voulons que les jeunes scientifiques contribuent de façon significative à une recherche globale qui réduira la pauvreté et améliorera le développement durable.

La priorité de l'IFS reste la promotion de l'excellence scientifique à travers l'appui à de jeunes scientifiques par des bourses de fonctionnement et par leur perfectionnement en tant que chercheurs dans un pays en développement. Cependant, l'humanité doit faire face de plus en plus souvent à des problèmes de développement interdépendants et cela demande aux scientifiques de travailler ensemble, mais aussi avec d'autres professionnels et spécialistes. C'est pourquoi, dans le Plan stratégique 2011-2020, « Travaillons ensemble », il est prévu, de soutenir des équipes de recherche associées, certaines pluridisciplinaires, après une phase d'initiation aux projets collaboratifs, pour renforcer les dynamiques de recherche, l'expertise et l'expérience, à même de résoudre des questions plus complexes ou des problèmes qui nécessitent plus d'une seule spécialité. Le changement majeur de notre vision est de ne plus seulement aspirer à l'amélioration des qualités individuelles des jeunes chercheurs des pays en développement, mais aussi, en les associant à des développeurs, de valoriser les résultats de leur recherche, obtenue sur les sujets éligibles par l'IFS. En d'autres mots, l'IFS veut promouvoir la coopération entre les hommes et les femmes de science, dès le début de leur carrière dans les pays en développement, pour que leurs recherches soient utiles à leur société.

Acronyms

AU/NEPAD	African Union / New Partnership for Africa's Development
AWARD	African Women in Agricultural Research and Development
BCDD	Broadband Commission for Digital Development
BOT	Board of Trustees
CES	Capability enhancing support
CGIAR	Consultative Group on International Agricultural Research
CTA	Technical Centre for Agricultural and Rural Cooperation
EU	European Union
GEF	Global Environment Facility
GDP	Gross Domestic Product
GNI	Gross National Income
ICT	Information and Communication Technologies
IEA	International Energy Agency
IFPRI	International Food Policy Research Institute
LDC	Least Developed Countries
LIC	Low Income Countries
MDG	Millennium Development Goals
M and E	Monitoring and Evaluation
MELP	Monitoring, evaluation, learning and planning
MESIA	Monitoring and Evaluation System for Impact Assessment
MIC	Middle Income Countries
MSC	Most Significant Change
Norad	Norwegian Agency for Development Cooperation
OECD	Organisation for Economic Cooperation and Development
RBM	Results-Based Management
RUFORUM	The Regional Universities Forum for Capacity Building in Agriculture
SAC	Scientific Advisory Committee
SDG	Sustainable Development Goals
SMART indicators	Indicators that are: Specific, Measurable, Achievable, Relevant and Time-bound
UAE	United Arab Emirates
UMIC	Upper Middle Income Countries
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VLIR	Vlaamse Interuniversitaire Raad
Web 2.0	A second generation of the World Wide Web that is focused on the ability for people to collaborate and share information online
WIOMSA	Western Indian Ocean Marine Science Association

Chapter 1: The contemporary global context for the work of IFS

1.1 A mighty challenge

More than four decades after its conception, the objectives of the International Foundation for Science remain at the heart of the world's efforts towards universal, integrated and transformational development. These are encompassed in the Sustainable Development Goals, agreed by nearly all the world's nations in September 2015, including 17 goals to shape the future through 2030, backed by 169 detailed targets.

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1.2 Interlinked Sustainable Development Goals

We live today in a world that faces many interlinked challenges, which are encapsulated into 17 SDGs. These goals apply to every nation and every sector. They are all inter-connected, in a system. We cannot aim to achieve just one goal. We must

2. Including 800 participants representing 90 governments and more than 390 scientists, innovators, technology specialists, entrepreneurs and civil society representatives.

achieve them all. Achieving these goals involves making very big, fundamental changes in how we live on Earth. The challenge for IFS is not to tackle all goals but to select the goals and targets where we can make a difference through our science. To develop simple and affordable solutions, sensitive to the local context, and build capacity of young scientists, individually and in collaborative groups to contribute to the fundamental changes we need to bring about. Table 1 below highlights the SDGs and the targets where a clear role exists for science, technology and innovation.

Table 1: Sustainable Development Goals and Targets with a role for Science, Technology and Innovation

1.4. 'Build the resilience of the poor... and reduce their vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters'

2.3. 'Double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers'

2.4. 'Ensure sustainable food production systems and implement resilient agricultural practices

2.5. 'Maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species... and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources ...'

3.9. 'Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination'.

4.7. 'Ensure that all learners acquire the knowledge and skills needed to promote sustainable development..'.

4.9. 'Substantially expand ... the number of scholarships available to developing countries, in particular ... for enrolment in higher education ... and in communications technology, technical, engineering and scientific programmes'.

5.5. Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life

5.8. Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women

5.9. Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels

6.3. 'Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials ...'.'

6.4. 'Substantially increase water-use efficiency across all sectors ...

6.6. 'Protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes'

7.2. 'Increase substantially the share of renewable energy in the global energy mix'.

7.4. 'Enhance international cooperation to facilitate access to clean energy research and technology ... and promote investment in ... clean energy technology'.

8.2. 'Achieve higher levels of economic productivity through diversification, technological upgrading and innovation ...'.

9.5. 'Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, encouraging innovation and substantially increasing the number of research and development workers ... and public and private research and development spending'.

11.5. 'Significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor people in vulnerable situations.

12.2. 'Achieve the sustainable management and efficient use of natural resources'.

12.3. 'Halve per capita global food waste ... and reduce food losses along production and supply chains, including post-harvest losses'.

12.4. 'Achieve the environmentally sound management of chemicals and all wastes throughout their life cycle ... and significantly reduce their release to air, water and soil and minimize their adverse impacts on human health and the environment'.

12.5. 'Substantially reduce waste generation through prevention, reduction, recycling and reuse'.

13.1. 'Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters ...'.

13.3. 'Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to ... mobilize jointly $100 billion annually by 2020 ... to address the needs of developing countries in meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization'.

14.1. 'Prevent and significantly reduce marine pollution, in particular from land-based activities'.

14.2. 'Sustainably manage and protect marine and coastal ecosystems and take action for their restoration in order to achieve healthy and productive oceans

14.3. Minimize and address the impacts of ocean acidification

14.4. '... Regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks ... to levels that can produce maximum sustainable yield ...'.

14.5. 'Conserve at least 10 per cent of coastal and marine areas ... based on the best available scientific information'.

14.7. 'Increase the economic benefits ... from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism'.

15.1 'Promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally'.

15.2. 'Combat desertification, restore degraded land and soil ... and strive to achieve a land degradation-neutral world'.

15.5. Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources ...'.

15.9. 'Introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land ... and control or eradicate the priority species'.

17.6. 'Enhance ... regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing ...'.

17.8. 'Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries... '.

The topics in table 1 do not prescribe what recipients of IFS grants should research; they serve only to characterize some of the mighty challenges that exist. As further guidance, IFS accepts proposals into three clusters of research areas. These three areas are shown in figure 1 below, and each cluster is associated with the relevant SDG targets.

In the past 40 years, scientists, planners, farmers and funders enabled an increase in world food supply of 150%. In the coming 40 years, the challenge is to increase food supply by 70%. Yet this challenge is more complex, and inter-related with the crises in water and energy, conservation and biodiversity loss and a changing climate.

In this context, the original need identified for the International Foundation for Science remains crucial today, that 'Scientific research provides an important input for sustainable management of biological water and energy resources. Scientific knowledge is central for rural, urban, industrial, and policy development, which will lead to improvement of people's livelihoods'.

The most recent independent review of IFS[3] acknowledged its bespoke support, as an unparalleled global network of researchers, technical advisers and partnerships in developing countries dedicated to building the capability of young developing country scientists. It represents an important mechanism for science academies and development organisations to contribute to international research development co-operation, the key objectives of which are to support excellent science and equitable and sustainable development towards the attainment of the SDGs.

Figure 1: IFS Research clusters with associated SDG targets

Biological Resources in Terrestrial Systems

- Double agricultural production
- Build adaptive capacity to shocks and disasters
- Build resilient agriculture systems that maintain ecosystems
- Conserve genetic diversity of farmed plants and animals
- Reduce pollution
- Improve economic productivity through technological innovation
- Sustainably use and manage natural resources
- Develop sound management of chemicals and wastes
- Recycle, reuse
- Sustainably manage forests
- Combat desertification
- Reduce impacts of alien species

Water and Aquatic Resources

- Build adaptive capacity to shocks and disasters
- Conserve genetic diversity of farmed plants and animals
- Reduce pollution
- Improve water quality
- Improve water productivity
- Improve economic productivity through technological innovation
- Sustainably use and manage natural resources
- Halve food wastes
- Develop sound management of chemicals and wastes
- Recycle, reuse
- Develop and implement science based fisheries management plans
- Minimize and address ocean acidification
- Conserve coastal and marine areas
- Increase economic benefits from the sustainable use of marine resources
- Reduce impacts of alien species

Food Security, Dietary Diversity and Healthy Livelihoods

- Double agricultural production
- Build adaptive capacity to shocks and disasters
- Build resilient agriculture systems that maintain ecosystems
- Conserve genetic diversity of farmed plants and animals
- Reduce pollution
- Improve water quality
- Improve water productivity
- Halve food wastes
- Develop sound management of chemicals and wastes
- Develop and implement science based fisheries management

3. Muraguri-Mwololo, Schertenleib and Svensson, 2010. External Evaluation of the International Foundation for Science.

IFS grantee Rodrigue Constant Sandjong Sani (Cameroon).

Chapter 2:
The IFS contribution

2. 1 The original concept

One of the principal recommendations of the Pugwash Conference in Venice[4] in 1965 was to establish the International Foundation for Science 'in order to address the stultifying conditions under which younger faculty members in the universities of developing countries were attempting to do research'[5]. The original concept proposed that 'individual grants to developing country scientists will greatly enhance opportunities for original research and scientific growth' and the concept has been strongly endorsed by every subsequent independent review of the organisation.

Whilst small grant schemes are notoriously expensive to administer compared to larger scale projects, they play a special and vital role in the early career path of scientists. Applications to IFS have always been rigorously assessed by international specialists, with detailed feedback to all applicants. Unsuccessful applicants have received valued counselling early in their research careers, whilst those that succeeded have gained confidence from the international recognition of their ideas and from the opportunity to manage whole research projects and associated budgets. More strategically, the provision of grants has been complemented by capability enhancing support. This has included equipment purchasing support and thematic workshops, commonly with partner organisations, such as Proposal Writing, Science Writing and Science Communication, and travel grants to share research results.

Between 2006 and 2010 IFS organised 127 thematic and research skills capability building events in collaboration with its partner organisations, with 3,154 participants in over 30 countries. In the period 1974–2017, IFS has awarded 8,0000 small grants, in 105 countries; 17,500 scientists in the developing world have benefited from scientific counselling, and more than 65,000 from using equipment purchased by IFS.

Nearly forty years on, the International Foundation for Science is seeking to renew cooperative solutions around today's global problems, and to contribute to building in the developing world the potential of science to address the mighty challenges that now confront humanity.

2.2 Listening and reflecting ahead of making change

Following the decision by its Board of Trustees in October 2010, IFS consulted widely in the process of envisioning the future direction of IFS support, which is presented in this strategy.

4. The Pugwash Conferences take their name from the location of the first meeting, which was held in 1957 in the village of Pugwash, Nova Scotia, Canada. The stimulus for that gathering was a manifesto issued in 1955 by Bertrand Russell and Albert Einstein – and signed also by Max Born, Percy Bridgman, Leopold Infeld, Frederic Joliot-Curie, Herman Muller, Linus Pauling, Cecil Powell, Joseph Rotblat, and Hideki Yukawa – which called upon scientists of all political persuasions to assemble to discuss the threat posed to civilization by the advent of thermonuclear weapons. Since then the Nobel Prize winning conference series of scientists meeting in private as individuals, rather than as representatives of governments or institutions has expanded its remit to seeking cooperative solutions for global problems. The 1965 meeting first proposed the creation of IFS.

5. The idea was refined at the Pugwash Conference in Sochi in 1969, and presented to the Advisory Committee for Application of Science and Technology to Development in New York by Roger Revelle (Professor of Science and Public Policy at the University of California). Sven Brohult, president of the Royal Swedish Academy of Engineering Sciences became an enthusiastic convert to the idea and a persuasive strong-willed soul of the enterprise. Backed by 16 national academies of science the International Foundation for Science was established in Stockholm in 1972.

A global conversation amongst IFS stakeholders lasting four months engaged with 4,400 people in different ways. Colleagues that provided inputs into the discussions about the future IFS strategy included potential, successful, as well as failed IFS applicants, active and former grantees, advisers[6] and scientific specialists, as well as academics and educationists – some of whom were not earlier connected to IFS, and representatives of donors, partner organisations, government officials and others. The envisioning process involved reflection and review of the main components of the past IFS programme, i.e. research grants to individual scientists who are at the beginning of their research career, and capability enhancing support. The envisioning began with scientists from the developed and developing world hosted by Norad, together with IFS, at a seminar considering the merits of 'Science for Science and/or for Social Relevance: Is there a Contradiction?' in Oslo in 2010.

During the process Regional Consultation Meetings were hosted in Latin America in Merida, Mexico, Asia Pacific in Bangkok, Thailand and Africa in Kampala, Uganda. Sessions also took place at scheduled meetings[7] across Africa and Asia. A digital questionnaire survey was sent out to 20,000 IFS stakeholders, and more than 4,000 persons responded to it.

A key emphasis of the envisioning process was on proposed new elements that have been suggested for the future programme, building on the recommendations of four external evaluations of IFS including the latest (2010), and the vision statement of the director.

With support from Norad, and in association with the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), IFS investigated the specific regional needs with regard to empowering African women scientists, mechanisms IFS could use to promote empowerment of women scientists, and value which might be added to associated ongoing regional initiatives and strategies.

Originally we mapped the IFS strategic approach against the objectives of the Millennium Development Goals (MDGs). The MDGs which included: 'promoting the strategic role of science and technology', 'enhancing technological innovation in developing countries, through strengthened national innovation, research and development capacity' and 'improving opportunities for young people through the creation of enabling environments to address the special needs of least developed countries' underscored the relevance of the IFS mandate in 2010.

In 2015, when governments, businesses and civil society together with the United Nations started to mobilize efforts to achieve the Sustainable Development Agenda by 2030, IFS recast its strategy, highlighting and emphasizing its resonance with the emerging universal, inclusive and indivisible calls for action by all countries to improve the lives of people everywhere. This version of the IFS strategy (3.2) relates the Sustainable Development Goals and Targets with the role for Science, Technology and Innovation that IFS aims to contribute to (see also table 1).

6. Advisers are the network of established and senior international scientists at IFS who contribute to the peer review process of research grant applications and act as ambassadors for our programmes.

7. The Nairobi/Carnegie meeting 'Developing and Retaining the Next Generation of African Academics', the 'Ministerial Conference on Higher Education in Agriculture', Kampala, Uganda, the IFS/VLIR 'Scientific Writing Course', Can Tho, Viet Nam, the IFS/WIOMSA 'Sida Marine Annual Review Meeting', Zanzibar, Tanzania, the 'Scientific Methodology and Proposal Writing Workshop', Njala, Sierra Leone, the 'International Pesticide Conference', Ouagadougou, Burkina Faso, and the AWARD 'Proposal Writing Workshop', Mombasa, Kenya.

2.3 A revised mission

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 dramatically transform the legacy left by the poor recent stewardship of the world's biological, water and energy resources. In this context, it is more crucial now, than ever before that the IFS plays its role in granting and building the capability of those 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.

In order to adequately respond to this challenge, the 2011–2020 strategy of IFS, 'Working Together', is built around a need and a mission statement. In 2015, IFS revised its need and mission statement[8] in association with its recast strategy to 2020. The new Need and Mission are shared below:

The need

Science can be a significant driver of economic and human development. Used properly it can help strengthen the human condition globally through improved livelihoods, food security, health and wellbeing. The scientists of tomorrow must contribute to securing accessible and affordable food, water and energy to a rising population within a scenario of environmental sustainability, as directed by the 2030 Sustainable Development Goals.

While low-income countries produce a sizeable number of scientists, they experience significantly high rates of brain drain as scientists migrate in search of facilitated conditions in the most developed countries. The International Foundation for Science holds that a sound basis for contributing to the establishment and expansion of developing country science and to help these countries retain scientific talent is to identify, select and support promising early-career men and women scientists, and offer them opportunities at their home base to plan, produce and put knowledge and technology into use.

In the decade covered by this strategy, individual and collaborative research conducted by developing country scientists needs to contribute to global efforts to reduce poverty and support sustainable development to deliver on the global Sustainable Development Goals. Support by the International Foundation for Science will strengthen the possibilities for early-career men and women scientists to productively engage in innovation and policy domains of relevance and use in their own countries.

Over a period of 40 years, IFS has supported 8,000 scientists from 105 countries, many of whom are now leading scientists or science leaders. Guided by its 2011–2020 Strategy, IFS will continue to facilitate research on properties of biological water and energy resources, with a focus on physical, chemical, and biological processes, as well as relevant social and economic aspects important in the conservation, production, and renewable use of natural resources.

The mission

IFS shall contribute towards strengthening the capability of young men and women scientists in developing countries, not only to conduct relevant and high quality research, but to enhance opportunities to put it into use in their home environments.

8. Formulated by the IFS Board of Trustees.

In maintaining the original objective of supporting science in ways that promote a decline in the 'brain drain', whereby talented scientists are distracted away from the developing world and the problems extant there, the revised mission also aims to reflect today's changing circumstances and opportunities, especially the role that science plays in society today, and the ways in which science and development landscapes are navigated and linked. In this regard, IFS attaches particular importance to the transformational nature of emerging Information and Communication Technologies[9] for bringing early career developing country scientists into the global research community.

A major change in our agenda is therefore not only to strengthen the capability of those embarking on a research career in the developing world, but also to support young scientists in their actions to bring about change, in terms of their values and objectives and to put their science into use. Capability in this context denotes a scientist's opportunity and ability to generate valuable research outcomes. Agency in this context is what a scientist is able to do and to achieve in applying his/her research in pursuit of whatever goals or values he or she regards as important[10].

An important argument for focusing on the individual agency of developing country scientists is the role that such agency can play in removing inequality in the respect and regard accorded to such scientists. IFS believes that respect and regard is strongly influenced not only by publishing, but also by participating in decisions on policy and influencing the understanding, processes, products and services that derive from scientific enquiry.

2.4 Our approach

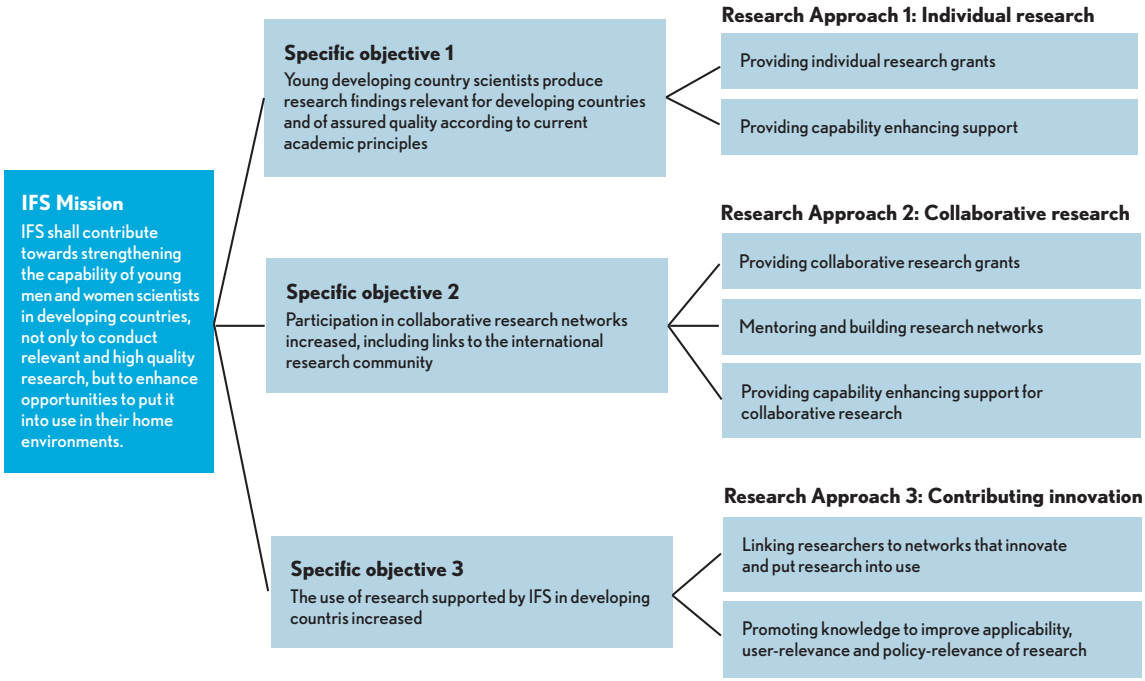
During this IFS strategy we aim to support excellent individual and collaborative research, to build capability of early-career scientists in the developing world, and to contribute innovation to sustainable management of biological and water resources. In particular, IFS is enabling those scientists to contribute to a global research community that is reducing poverty and supporting sustainable development.

To deliver the IFS mission, we provide three distinct strands of support: (i) grants and capability enhancing support early in the research career of individual scientists from least developed countries; (ii) grants and capability enhancing support for collaborative research; and (iii) support to contribute innovation and to put research into use (see Figure 2).

9. Regarding the Post 2015 Sustainable Development Agenda, Information and Communications Technology is of vital significance. The Members of the Broadband Commission consider broadband to be one of the strongest and most effective tools in bringing about transformative solutions for sustainable development. From governance to health to education to gender equality to enabling the low-carbon economy, broadband is already advancing a more equitable, inclusive and environmentally healthy world—but there is more work still to be done.

10. The use of the term agency here is best understood via Amartya Sen's description of an agent, defining an agent as someone who acts and brings about change, whose achievement can be evaluated in terms of his or her own values and objectives. This differs from the more common use of the expression "agent" sometimes used in the literature of economics and game theory to signify a person who is acting on someone else's behalf. Furthermore, agency focuses on the ability to personally choose the functionings (the beings and doings) that one values (Sen, A. Development As Freedom. New York: Knopf, 1999).

Figure 2: IFS approach to empowering early-career scientists



Approach 1: Individual research

During this 10 year strategy the primary focus of the International Foundation for Science will be the promotion of excellent science through early-career research grants and capability enhancing support to researchers in developing countries. We anticipate that the rigorous assessment of research proposals by specialists will continue to provide international recognition to successful applicants and enhance opportunities for original research and scientific growth.

Specific Objective # 1:

Young developing country scientists produce research findings relevant for developing countries and of assured quality according to current academic principles.

- Research capability built
- A body of quality scientific research delivered
- A 'multiplier effect' that impacts more young scientists than just IFS grantee

IFS believes that science holds the potential to transform the contemporary global challenge, not only to provide sufficient food, water and energy but also to ensure security of supply, at affordable cost and within acceptable limits of environmental change. IFS is aware that starvation, as well as water and energy deprivation is not addressed by increasing availability alone, but by securing entitlement to those commodities for 9 billion people. In the face of such a task there is a vital and powerful role for many creative, analytical minds across a broad array of research fields. IFS recognises that the sustainable and equitable stewardship of global resources and the provision of services from them will draw on many technical and social fields of research, relating to: agriculture, energy, fisheries, food security, forestry, health and nutrition, natural products, water and sanitation.

However, IFS believes it is vital that young researchers have the opportunity to propose research which they identify can address problems in their country of origin, relevant to the needs of the country, supported through a demand-led, long-term, predictable research granting and capability enhancing support programme across a broad spectrum of biological and water resources.

Approach 2: Collaborative research

IFS has recognized the importance of support to individual researchers for more than four decades and will continue to provide renewable individual grants. However, the interlinked development challenges that face humanity increasingly require scientists to work with each other, uniting different disciplines, different countries and regions, as well as to work with other professions and specialists. Therefore, through the phased introduction of a new approach within the 2011–2020 Strategy IFS will also provide support for researchers to combine strengths, expertise, and experience, to address a larger topic or a research issue including where more than one discipline is required. IFS believes that through interdisciplinary collaborative research, early career scientists can learn new insights from each other, develop new skills and gain access to different funding sources.

Specific Objective # 2:

Participation in collaborative research networks increased, including links to the international research community

- Interdisciplinary collaborative research that tackles development issues
- Collaborative research links between scientists in the developed and the developing world built

Through support and mentoring we aim to reduce possible barriers including: difficulties in finding appropriate working partners, reaching consensus and team building, clarification of intellectual property rights, ownership of data, credit for work, differences (amongst disciplines) in the nature and scope of knowledge, different methodologies or analytical frameworks, inaccurate preconceptions about other disciplines, or difficulty in learning the 'languages' of other disciplines.

It is anticipated that collaborative research could be across departments in a single institution (e.g. nutritionists, social economists, technical specialists – able to take an holistic approach and tackle a bigger development problem than any may tackle alone), across a country (e.g. where a common issue such as cyanide toxicity of tube well water might be spatially investigated), or across regions (e.g. where climate change resilience being investigated amongst communities in similarly affected places in say East, West or Southern Africa might be shared and compared). We see a vital role for IFS as a platform for linking early-career scientists from developed and developing countries in research collaboration.

Approach 3: Contributing innovation

IFS operates at the interface of science and sustainable development. We contribute to, and are supported by, science academies and development organisations. IFS believes that science holds the potential to transform the contemporary global challenge and it can provide the evidence for policy change and the basis for international development impact.

Recognising that research products are just a starting point in the broader process of putting research into use and enabling innovation, there are two key challenges to be addressed in this context over the course of the ten-year strategy. The first is to begin to build capabilities and competencies at an early stage in science careers that help to put research into use in developing countries. A key capability requirement for researchers in this context is the understanding of the political and incentive context for the uptake of research by entrepreneurs, industry, and medicine, and in policy and decision-making. Within the ten-year strategy IFS aims to introduce courses on understanding of the political and incentive context for science use to better prepare researchers for engaging with others to put research into use.

Specific Objective # 3:

The use of research supported by IFS in developing countries increased

- Scientific research findings made accessible to users, entrepreneurs and policy and decision makers
- Improved knowledge and networks leads to the production of more research results that are applicable, user-relevant and policy- relevant

Related to this, on a very practical level is capability in science communication for impact, through support in science writing as well as media development (drama, film, mobile phone and internet, web 2.0 applications) to influence policy and practice.

However, to put research into use often requires a champion who is able to navigate complex business, political and institutional landscapes, building networks of practitioners and policy actors willing to advocate and promote the approach – and this is unlikely to be the originator of the research. Therefore the second challenge is that of building links and brokering networks and alliances that support demand for and use of research. This will include working with partners towards establishing more supportive policy and institutional environments that can create effective demand for appropriate research products, and building links to society at large, and the business community, including networks, science fairs and conferences.

A graduation strategy from IFS support as a component part of the early-career path of a developing country scientist will necessarily involve building collaborative links amongst the IFS research community and linking successful grantees with other research programmes. The core support of IFS remains that first competitive grant to post-graduate degree holders, perhaps followed by success with further individual or collaborative research through IFS. After this stage through collaborations and partnerships sometimes negotiated by IFS, promising young scientists are facilitated to bring their skills into larger arenas of opportunity (i.e. EU frameworks, GEF, CGIAR, AU/NEPAD plans for science and technology, or bilateral grant provision e.g. BioInnovate Africa).

A shrimp farmer helping IFS grantee Thao Suong Nguyen with her project (Vietnam).

Chapter 3: Priority and eligibility for IFS support

3.1 Country eligibility

We live in a complex world of both unprecedented opulence and remarkable deprivation, and the development priorities of the IFS ten-year Strategy go beyond economic developments alone. The strategic development priorities of IFS include the processes for: overcoming poverty, hunger and all forms of malnutrition, the sustainable management of resources, improving living conditions, expanding the interests and individual agency of people in least developed countries, the human rights of those who suffer deprivation, especially women, and of expanding freedoms as the primary end and principal means of development.

IFS aims to provide research grants, build capability in scientific research and individual agency in science and technology innovation in the service of expanding freedoms, and seek to preferentially support countries with weak and volatile scientific infrastructure.

Therefore, applications for individual IFS grant support (Approach 1) will be selected on merit, but are only eligible for consideration if they come from developing country scientists who are attached to institutions in the world's Least Developed Countries (LDCs), which are adjudged to provide them with a reasonable academic environment that will enable them to conduct research. Countries with a GNI per capita, Atlas method (current USD)[11] at or below the average for Middle Income Countries[12] (MIC) will be considered eligible for IFS Approach 1 support and as Research Coordinators within IFS Approach 2.

In order for scientists from countries with weak and volatile scientific infrastructure to work together with scientists in other countries (which have reached the threshold in national development that graduates them from IFS eligibility for Approach 1), country eligibility for Approaches 2 and 3 will be unrestricted, provided that Research Coordinators are from countries at or below the average for MIC,

11. GNI per capita (formerly GNP per capita) is the gross national income, converted to U.S. dollars using the World Bank Atlas method, divided by the midyear population. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. GNI, calculated in national currency, is usually converted to U.S. dollars at official exchange rates for comparisons across economies, although an alternative rate is used when the official exchange rate is judged to diverge by an exceptionally large margin from the rate actually applied in international transactions. To smooth fluctuations in prices and exchange rates, a special Atlas method of conversion is used by the World Bank. This applies a conversion factor that averages the exchange rate for a given year and the two preceding years, adjusted for differences in rates of inflation between the country, and through 2000, the G-5 countries (France, Germany, Japan, the United Kingdom, and the United States). From 2001, these countries include the Euro area, Japan, the United Kingdom, and the United States. Source: World Bank national accounts data, and OECD National Accounts data files.

12. Previously 'Least Developed Countries' status has been defined at IFS by the same proxy indicator of Gross National Income (GNI/capita), but eligibility for IFS support has been restricted to the Low Income Countries, the Lower Middle Income Countries and the countries with a GNI/capita that is below the average of the Upper Middle Income Countries. Since 2002, priority has been given to researchers who are from, and based in, Lower Middle Income Countries with weak and vulnerable scientific research infrastructure and lacking national funding mechanisms for young scientists. These have included most of the countries in the Sub-Saharan African region as well as some countries in Central America and Andean South America, as well as many countries in Asia. 70% of new grants were allocated annually, on an individual competitive basis, to applicants based in countries having an income (GNI/capita) below the average for the Upper Middle Income Countries (UMIC) group of the World Bank's annual list.

and that MIC are always beneficiaries. Therefore Collaborative Research (Approach 2) will be led by researchers from countries where GNI/capita is equal to or below the average for MIC countries but may include scientists from other countries who have their own resources. For Contributing Innovation (Approach 3), networks and partnerships will be considered based on the benefit they bring to scientists from countries where GNI/capita is equal to or below the average for MIC countries.

IFS has significant experience of brokering research links between scientists in the developing and developed world. Expanding and supporting productive links between young researchers from countries with different levels of development will be a priority of Approaches 2 and 3.

IFS also has a large alumni constituency that are often strategically placed in scientific and policy positions, in many countries with less developed neighbours, but that themselves are above the average for MIC countries. Experience has shown they can play an important role in helping IFS to reach early-career scientists of less developed neighbours. They have both an understanding of and relevant research experience in the research priorities of young scientists in neighbouring LICs and can be key players in implementing the expanded capability enhancing support efforts that are envisioned in both individual and collaborative research approaches. Alumni can also play a major role in collaborative research and in contributing innovation, including supporting grantees in different countries and regions in understanding of the varied political and incentive contexts for science use.

3.2 Gender balance and ways of empowering women scientists

It is a priority for IFS to support women within developing world science, especially African research, and to enrich the scientific enterprise with the added diverse themes and perspectives that can be derived from a more balanced gender representation within science.

Global statistics indicate that women are not only unequally represented in science but also less likely than men to be involved in the planning, research, development or application of science. The underrepresentation of senior women scientists limits the role-models, mentors and professional networks available to girls.

The priority and the approach to empowering women in science, in the IFS strategy 2011-2020, builds on the learning from the 2009 IFS initiative 'Developing Africa through Science, Technology, and Innovation in Agriculture: Women as key drivers', undertaken with the Technical Centre for Agricultural and Rural Cooperation (CTA) and RUFORUM, and from the IFS contribution to the CGIAR project 'African Women in Agricultural Research and Development' (AWARD).

Our approach aligns with the 2030 Sustainable Development Agenda, in which women's rights and gender are addressed. Women's and gender issues are captured as a stand-alone SDG, #5 on Gender Equality, as well as in a number of areas important for women. Other goals cover important issues aiming to tackle specific aspects of inequality, for example, ensuring equal access to economic resources for women (1.5); access to nutritious food (2.1. and 2.2); access to education at all levels (4.1–4.3); and creating access to decent jobs (8.1–8.5).

Our focus on Africa reflects the identified needs, that are found to be most prevalent in Sub-Saharan Africa and supports the African Union declaration of 2010-2020 as the African Women's Decade, which includes a thematic focus on the promotion of women in science and technology.

IFS believes that mainstreaming a gender perspective in Science, Technology and Innovation (STI) could enrich innovative problem-solving and decision-making, enhance social equity, women's rights and contribute to the more effective achievement of the SDGs. This priority within the IFS strategy is based on the premise that to strive for gender equity in science is not only an international obligation, but a wise approach to science management and governance.

3.3 Age eligibility criteria in IFS programmes

IFS will continue to target its support to those at the beginning of their research careers through early-career research grants and capability enhancing support to researchers in developing countries. Based on the recommendations of its independent review and the results of consultations with many stakeholders across the regions where the organisation operates, IFS has adjusted its age eligibility criteria to better reflect the changing gender disaggregated regional research demographics (see Table 2).

Table 2: Age eligibility in IFS programmes (all eligible countries)

IFS Approach	Upper age limit of first time applicants	
	Men	Women
1 - Individual Grants	35	40
2 - Collaborative Grants	35	40
3 - Contributing Innovation	35	40

These age eligibility criteria relate to first time applicants. There is no age limit for renewal applicants.

IFS is piloting Approach 2: Collaborative Research within this ten-year strategy. The aim of these pilots is to understand how IFS can best enhance the capability of young researchers to learn "how to conduct collaborative research". The age limit in Table 2 refers to the age of the Research Coordinator in a collaborative research team. As the approach develops, different models of collaborative research may be applied and different age criteria may be used. Whilst supporting several ways of conducting collaborations, calls for collaborative research may sometimes target researchers by gender, region, nationality or thematic area.

IFS grantee Isabel Domínguez Rivera (Colombia).

Chapter 4: Monitoring, evaluating, learning and planning at IFS

IFS recognises that effective management and monitoring requires sound and authoritative data and clear results chains and causal relationships linking activity, output and outcome.

4.1 Integration of planning, measurement and management

Strategic planning, performance measurement and Results-Based Management (RBM) are integrated at IFS (see Figure 3) to support flexible and responsive management and accountability to all stakeholders including donors.

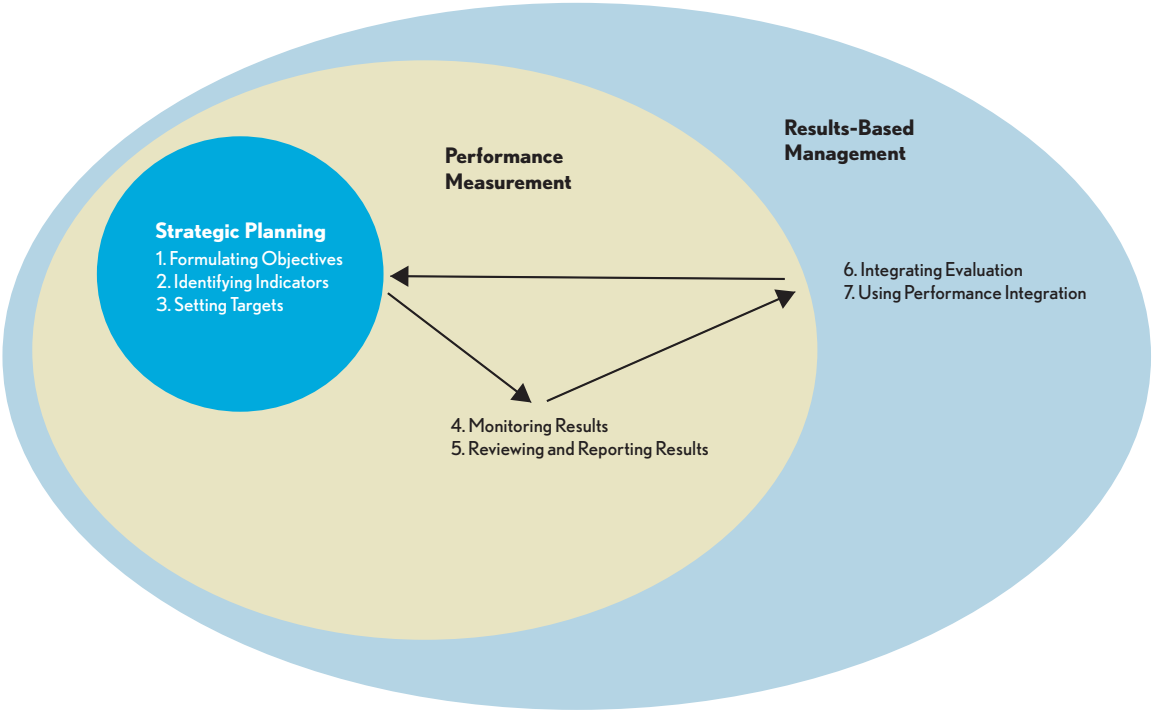


Figure 3: The relationship between strategic planning, performance measurement and Results-Based Management at IFS

IFS introduced the Monitoring and Evaluation System for Impact Assessment (MESIA) in 2000 under the guidance of Dr Jacques Gaillard (seconded from the French Institut de recherche pour le développement, IRD). The system draws on the IFS database and produces and analyses data on grantees and undertakes surveys of the conditions under which young scientists work and the impact of IFS. MESIA reports provide a long term oversight of the impact of IFS support and can for example focus on a geographic area or an area of science. To date, nine impact studies (MESIA Reports) have been published.

In 2010, staff received training in RBM conducted by Professor John Mathiason. In 2011 IFS introduced RBM to deal with analytical issues of attributing impacts and aggregating results, to ensure a distinct yet complementary role for evaluation, and to

establish organisational incentives and processes that will stimulate the use of performance information in management decision-making.

In 2012 IFS introduced the 'routinized', non-indicator based system of reporting by grantees and recipients of capability enhancing support that is complementary to the RBM logic model approach, to capture unanticipated changes, through Most Significant Change (MSC) reporting.

Every second year of the ten year time horizon of the strategy, IFS action plans are drawn from the rolling monitoring, evaluation, learning and planning process shown in Figure 4.

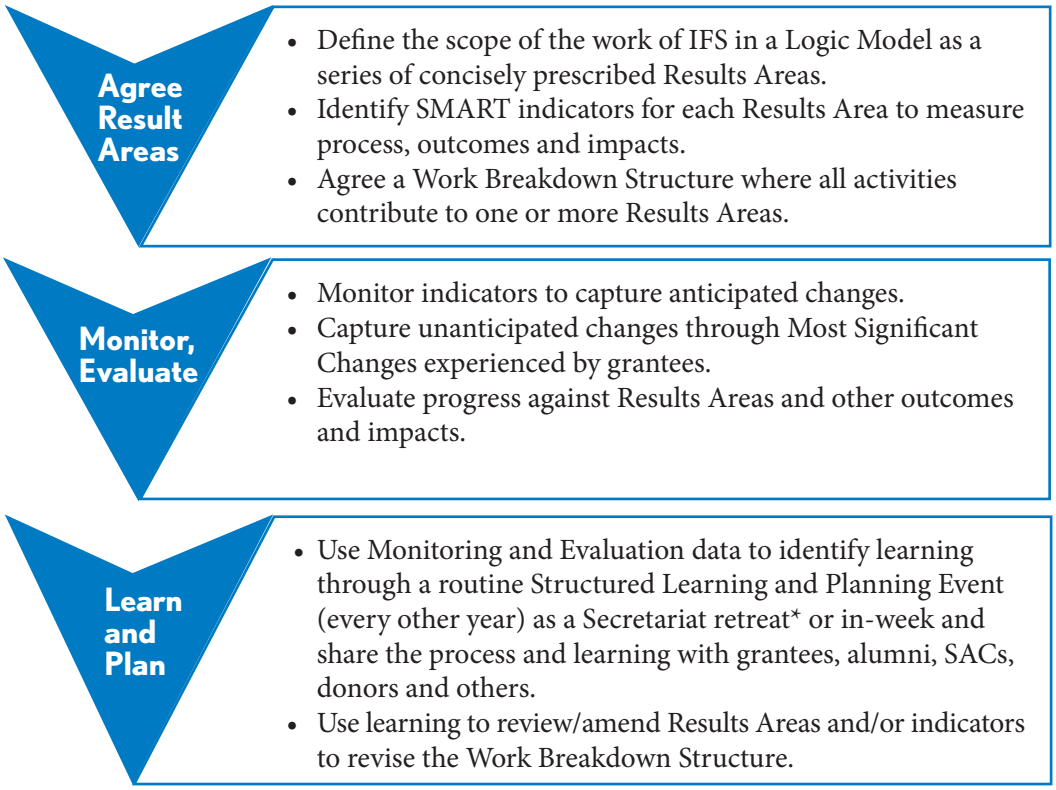


Figure 4: The integration of monitoring, evaluation, learning and planning at IFS

* a definite time (several days to one week) spent away from one's normal work for the purpose of evaluating, learning and planning from monitoring

4.2 Three components of monitoring and evaluation

The IFS strategy therefore operates through RBM with action plans drawn from a rolling monitoring, evaluation, learning and planning process on a two year cycle. Biannual Learning Points will draw on evaluations against logic model indicators of Outcomes, as well as Most Significant Change (MSC) reporting by young scientists (to capture unanticipated changes), and commissioned reports of longer term Impact Assessments (MESIA).

The process will be one of monitoring, evaluating, learning and planning, as follows:

- Monitoring what we expect to happen – using evaluations against Logic Model Indicators of Outcomes, and capturing unanticipated changes – using a participatory non-indicator-based system involving MSC experienced by grantees.
- Evaluating medium and longer term impact through commissioned MESIA reporting.
- Learning from, and sharing, our monitoring and evaluation at Strategic Learning and Planning Events.
- Planning future approaches based on our learning.

Appendix 1: The IFS Strategy 2011–2020 Logic Model

Overall objective:
'Young men and women scientists in developing countries conduct relevant and high quality research that is put into use.'

Specific Objective # 1:
Young developing country scientists produce research findings relevant for developing countries and of assured quality according to current academic principles.

Types of Outputs	Outcome	Performance Indicator of Outcome	Data Source	Data Collection Strategy (method/who/when)	Assumptions
Funding opportunities provided for young scientists to proposed research in low income countries which is rigorously assessed by c. 1,000 IFS international experts	1.1 Increase in demand for proposal writing support amongst young scientists in low income countries	Number of applications and rate of approval per partner country, gender and year (IFS database)	-IFS database -IFS 'MELP'-system -IFS MESIA Reports -ASTI statistics -UNESCO statistics	-Most Significant Change (MSC) reporting within IFS Participatory Monitoring and Evaluation (PM&E) system annually -IFS Secretariat reporting against Results-Based Management (RBM) system baseline and indicators -Commissioned regional, national and disciplinary impact studies -Assess long term trends from gender disaggregated international science technology and agriculture statistics	Applicants continue to value grant and capability enhancing support as well as comprehensive and constructive advice
Local research training courses delivered through a long-term, predictable research capability enhancing programme	1.2 More research proposals produced and approved	Number of proposals and rate of approval per partner country, gender and year (IFS database)			
Link and support quality research in a developing country relevant to the needs of the country supported through a long-term, predictable research granting and capability enhancing programme	1.3 Researchers funded by IFS complete their research	Number of completed and published research projects, per partner country and year (IFS database, MESIA)	-IFS database -IFS 'MELP'-system -IFS MESIA Reports	-MSC reporting within IFS PM&E system annually -IFS Secretariat reporting against RBM system baseline and indicators	Small grants and capability enhancing support provide a platform for quality research in low income countries

Types of Outputs	Outcome	Performance Indicator of Outcome	Data Source	Data Collection Strategy (method/who/when)	Assumptions
IFS provides grants and support to enable scientists to work in their own countries and tackle research related to local needs	1.4 Talented scientists stay in developing countries to conduct their research and innovate in ways that address problems in low income countries and that positively impact their home institutions – plugging the so-called Brain Drain	-Outline of relevant IFS-supported research results, by country, institution and year (IFS database) -Assessment of reporting of MSC by scientists -Number of IFS-supported scientists that stay in their countries and continue to be active in research/ research management 5-10 years after IFS grant (MESIA)	-IFS database -IFS 'MELP'-system -IFS MESIA Reports -Partner institutions records and reporting	-MSC reporting within IFS PM&E system annually -IFS Secretariat reporting against RBM system baseline and indicators -Commissioned regional, national and disciplinary impact studies -Assessing long term trends from gender disaggregated data of funding sources and functions from partner institutions	Research support provides sufficient incentive for scientists to work in their own countries and tackle research related to local needs
IFS raises awareness of research use issues in research planning	1.5 Increased use of IFS research results	-Patents, awards, national and international recognition of IFS supported scientists (IFS database, MESIA)	Science Citation Indices	-Commissioned regional, national and disciplinary impact studies -Assessing long term trends from gender disaggregated Science Citation Indices	Small grants and capability enhancing support provide useful research
IFS facilitates a 'multiplier effect' whereby grantees help other young scientists	1.6 IFS-supported scientists encourage and mentor other young peers	-Existence of mentorship by IFS-supported scientists (MSC and alumni reporting)	-IFS database -IFS 'MELP'-system -IFS MESIA Reports	-MSC reporting within IFS PM&E system annually -IFS Secretariat reporting against RBM system baseline and indicators -Commissioned regional, national and disciplinary impact studies	Recipients of IFS support choose to share the knowledge and opportunity they have gained with other scientists
IFS responds to requests to support reform and quality assurance work in research administration in Africa, Asia and Latin America. Of these regions, Africa is to be given precedence.	1.7 Administration of research grants improved in institutions receiving IFS support	-Grantees report improved administration of IFS research support in institutions (IFS database, MSC)	-IFS database -IFS 'MELP'-system -IFS MESIA Reports -Partner institutions records and reporting	-MSC reporting within IFS PM&E system annually IFS Secretariat reporting against RBM system baseline and indicators -Commissioned regional, national and disciplinary impact studies	National and regional research administration and capability enhancement able to learn from IFS experience

Specific Objective # 2:
Participation in collaborative research networks increased, including links to the international research community.

Types of Outputs	Outcome	Performance Indicator of Outcome	Data Source	Data Collection Strategy (method/who/ when)	Assumptions
IFS pilots new Collaborative Research Approach which builds capability for IFS to support interdisciplinary working	2.1 IFS staff creates networks for scientists with common interest to encourage collaborative research	-Active networks of young scientists created (IFS database, survey of pilot users) -Number of collaborative proposals and rate of approval per partner country, gender and year (IFS database)	-IFS database -IFS 'MELP'-system -IFS Community monitoring	-MSC reporting within IFS PM&E system annually -IFS Secretariat reporting against RBM system baseline and indicators	Networking is attractive to young scientists who can then combine in useful consortia to research at a local, national or regional level
IFS provides international fora, digital and mentoring functions that facilitate exchange of information and research collaboration between members of extended research communities through IFS Community and Internet-based platform	2.2 Digital tools used to create networks where members of the research community conceive and propose collaborative research	-Number of researchers using digital tools for collaboration (IFS database) -Number of collaborative research proposals from the IFS Community (IFS database)	-IFS database -IFS 'MELP'-system -IFS MESIA Reports	-Register of digital tool use on IFS Community platform -IFS database -Commissioned regional, national and disciplinary impact studies	Internet access continues to increase across the developed and developing world
IFS in partnership with donors and academic partners in both developed and the developing countries build and enhance productive collaborative research links	2.3 Productive collaborative research conducted linking scientists in the developing world, and, where appropriate, linking with researchers in the developed world	-Number of facilitated and supported collaborative research projects, amongst developing country partners and, where appropriate, compatible developed country partners each year (IFS database, MESIA) -Quality and impact of the IFS collaborative research (MSC, MESIA)	-IFS database -IFS 'MELP'-system -IFS MESIA Reports -Collaborative research reports	-MSC reporting within IFS PM&E system annually -IFS Secretariat reporting against RBM system baseline and indicators -Commissioned collaborative research impact studies	A community of young scientists from developed and the developing countries can combine in useful consortia to research at a local, national or regional level
IFS raises awareness of collaborative research use issues in research planning	2.4 Increased use of IFS collaborative research results	-Patents, awards, national and international recognition of IFS supported scientists (IFS database, MESIA)	Science Citation Indices	-Commissioned regional, national and disciplinary impact studies -Assessing long term trends from gender disaggregated Science Citation Indices	Small grants and capability enhancing support provide useful research

Specific Objective # 3:
The use of research supported by IFS in developing countries increased.

Types of Outputs	Outcome	Performance Indicator of Outcome	Data Source	Data Collection Strategy (method/who/when)	Assumptions
Grantees are trained to undertake and maximise the impact of research promoted through increased *understanding of the political and incentive context* for policy and decision-making. Working with partners to build capability in *science communication for impact*, through support in science writing and media development (drama, film, mobile phone and internet, web 2.0 applications) to influence policy and practice.	3.1 Increase in use of IFS research by entrepreneurs and policy shapers and makers	-Number of entrepreneurial initiatives and/or policies traceable to or directly linked to research provided and made accessible (IFS database, MESIA)	-IFS database -IFS 'MELP'-system -IFS MESIA Reports	-MSC reporting within IFS PM&E system annually -IFS Secretariat Reporting against RBM system baseline and indicators -Commissioned regional and national impact studies	To undertake and maximise the impact of research depends on human capability, availability of research resources and the political and incentive context for policy and decision-making. Better internet access (cables from the UAE to East Africa), mobile phone connectivity, improved satellite coverage.
IFS pilots and launches a new Programme which builds links amongst the research community, other research programmes, the business community and society at large, e.g. networks, conferences, links	3.2 Increased use of research from participants in IFS Contributing Innovation Approach (IFS database, MSC, MESIA)	Number of facilitated and supported links to other research programmes, private sector and policy domains increased	IFS database. IFS 'MELP' system. IFS MESIA Reports. Partner institutions records and reporting.	-MSC reporting within IFS PM&E system annually -IFS Secretariat reporting against RBM system baseline and indicators -Commissioned regional and national impact studies	Demand can be generated amongst a broad community from research, business and policy domains for IFS research from young researchers with IFS grant and Capability Enhancing Support

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