This volume contains the written evidence accepted by the Science & Technology Committee for the Science and International Development inquiry.

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As at 8 February 2012
Written evidence submitted by the Department for International Development (Int Dev 00)

Introduction

1. The UK Government is committed to ensuring high-quality scientific evidence is effectively integrated into policy development and delivery.

2. Strengthening the capacity of science \(^1\) and scientists in the developing world by the British Government takes many forms and several parts of Government support it directly or indirectly. This submission to the Select Committee on Science and Technology covers some of the direct support, in particular by DFID as that is specifically mentioned as a focus for the Committee, but it should be seen in the context of work across the developing world where other Government departments take the lead. UK support with Government funding for improving science capacity in the developing world also includes: work undertaken by the British Council; the Research Councils; the professional Academies; the Commonwealth Scholarships Commission and many UK universities and other Government backed bodies. The European Union and United Nations bodies such as United Nations Educational, Scientific and Cultural Organisation or the Food and Agriculture Organisation (which in turn the UK contributes to) provide significant levels of support in this area. In addition private and civil society organisations in the UK such as the Wellcome Trust provide major support in specific areas (for example health), and the UK Government provides collaborative support. We have excluded these from this return, but some organisations are submitting evidence separately.

\(^1\) The working definition of science for this submission includes natural and physical sciences as well social sciences (including statistics and economics).
3. The UK Government recognises the importance of increasing scientific capacity in developing countries, and in particular in Africa and resource poor parts of Asia. But we recognise that strengthening scientific capacity is a long-term activity, involving a number of complex interventions. The monitoring of such interventions at key milestones at steps along the way, allows DFID to gain valuable feedback on progress, allowing activity to be adjusted and improved on the basis of information gathered.

4. There are a number of steps towards building a good body of scientists in developing countries, across many specialist disciplines, including the social sciences and operational research. Addressing any of these in isolation will not lead to optimal outcomes. These include adequate schooling so that there are sufficient numbers of people entering tertiary education, undergraduate and masters level training in local universities; availability of high-quality doctoral programs; postdoctoral positions for the ablest doctoral candidates to go into; merit-based career progression, and functioning universities and other higher education institutes including proper financial management. In order to develop world-class scientists, they must also have access to research funding. There also has to be a balance across the different scientific disciplines particularly given the importance of multidisciplinary work.

**Question 1: How does UK support scientific capacity building in developing countries and how should it improve?**

**Examples of Scientific Capacity Building in Developing Countries**

5. The UK, through DFID, commissions research and capacity strengthening programmes that aim to deliver impact in developing countries by (i) improving the skills of individuals to both undertake and use research at several points in their career; (ii) strengthening the ability of research departments to fund and manage independent
research and innovate; and (iii) helping to improve the enabling environment for research (for example increased Government funding for research or the establishment of national research councils).

6. All directly managed research consortia are required to have a research capacity building component. This includes realistic and achievable plans for country-led research and devolving research responsibility to Southern partners.

7. In areas where DFID has identified significant gaps, it has, or is in the process of developing, stand alone research capacity initiatives in order to provide longer term, more predictable funding to Southern country research organisations and networks.

8. DFID often collaborates with others who have expertise in this area, including the British Council, Research Councils, Commonwealth Scholarships Commission and the Wellcome Trust. **Examples** of DFID centrally-funded programmes supporting research capacity strengthening in sectors with a significant science component include the following. A full list can be provided to the Committee on request:

a) **Agriculture**

**Strengthening Agricultural Research and Development in Africa**

9. There is a significant lack of capacity to conduct and manage agricultural research in Africa. This programme aims to strengthen human and organisational capacity to ensure that National Agricultural Research Systems are better able to identify, generate and deliver research outputs that meet the needs of the poor. It has strengthened the organisational capacity of 12 institutions to deliver training and supported MSc graduates in 10 countries including Rwanda, Sudan, Zambia, DRC and Mali. Interim evaluation results
indicate that the graduates have started to play important roles in leading research initiatives in their countries and institutions.

b) Climate change

Policy Innovation Systems for Clean Energy Security

10. DFID is responding to identified capacity needs in Policy Innovation Systems for Clean Energy Security within four countries in East Africa by building research skills for young scientists in the area of bioenergy. To date 19 MSc students have graduated, while 17 MSc and 8 PhD students are in the process of studying. Twelve papers (eight peer reviewed), two Book Chapters and two Books have been published.

c) Health

Health Research Capacity Strengthening Initiative – Kenya (DFID and Wellcome Trust)

11. In Kenya the pool of scientists is aging and most health research is un-coordinated and funder-reliant. This programme is addressing these constraints by taking a ‘whole systems’ approach to capacity building. It addresses research governance, improving researcher skills and career progression, as well as strengthening demand for research outputs by the Ministry of Health. It has delivered:

- Improved capacity of young Kenyans to undertake research, with research from intern to post-doctoral levels.
- Strengthened capacity within Kenyan research organisations: four centres of research excellence have been established.
• Improved enabling environment for research: ongoing work with the National Council for Science & Technology to strengthen ethics regulations, raise the profile of science with young Kenyans and establish a knowledge sharing platform to facilitate policy making.

**European and Developing Countries Clinical Trial Platform**

12. The European and Developing Countries Clinical Trial Platform, with significant UK Government support, undertakes training in clinical trials that focuses on poverty related diseases. It is a partnership between 14 EU countries and Norway and African countries. Specific capacity development includes strengthening skills in laboratory expertise, research monitoring and research management.

d) **Infrastructure**

**Africa Community Access Programme**

13. The focus of this programme is sustainable road provision and maintenance and reliable access for poor communities. To strengthen research capacity it has established a community of practice of 530 experts across Africa, comprising transport practitioners in agencies and ministries across the African focal countries. This is enabling knowledge sharing of the latest research, providing new links for efficient transport provision, as well as ensuring the sustainability of the network.
e) Social Science

*African Economic Research Consortium (AERC)*

14. The AERC is a capacity building programme supporting African universities to raise the quality of MSc and PhD programmes through enhanced teaching and mentoring. Approximately 100 MSc graduates and 5 PhD graduates are trained each year.

15. In Côte d’Ivoire, for example, the Minister of Finance, the permanent secretary in the Ministry of Finance, and the economic advisors to both the President and the Prime Minister are AERC graduates. So are the governors of the central banks of Nigeria and Kenya and the general manager of the Bank of Mozambique. Impact mediated through behavioural change in governance is demonstrated through the number of AERC alumni occupying senior positions in Africa.

16. Additionally **DFID country offices** are often involved in projects where there are perceived to be gaps specific to that country. Three examples include DFID-Nepal which provides support for the National Academy for Science and Technology; DFID-India’s support for Indian scientists to publish work on climate change, and to prepare research bids; and DFID’s work with the International Centre for Diarrhoeal Disease Research in Bangladesh (ICDDR, B)

In other developing or middle-income countries other Government Departments undertake work which includes significant capacity strengthening for science. Examples include:

17. The Government Chief Scientific Adviser and the Head of the Government Office for Science (GO-Science) Sir John Beddington made the first high level science visit to Vietnam in 2009, during which opportunities for collaboration on Biotechnology and Biological sciences were identified. The visit was followed by a BBSRC mission
that led to a joint project on rice genome sequencing being taken forward by the John Innes Centre and Vietnam’s Ministry of Science and Technology. The project is helping develop scientific capacity in Vietnam as well as providing information to improve flood, drought, salt and pest tolerance in the world's most important staple food in the face of a changing climate and growing population.

18. The GO-Science Foresight Unit has invested in a programme of ‘follow-up’ to its major projects including working with developing countries and emerging economies to help them develop or enhance their scientific capacity. Two examples are:

A. The report *Infectious Diseases: preparing for the future* (2006) analysed the science and social context of the future long-term risks for plant, animal and human health in the UK and Africa. This led to a consortium of leading African organisations from five countries established the Southern African Centre for Infectious Disease Surveillance in Tanzania. This Africa-led initiative has attracted support from a range of international donors. In addition, the African Union commissioned Foresight’s lead African experts to develop the ‘AU Science and Technology Framework for the Detection, Identification and Monitoring of Infectious Diseases in Africa’.

B. The Foresight report *Future Flooding* (2004) has had major international impact, not least as the basis of a four-year UK-China ‘flagship’ project on sustainable flood-risk management; and the Foresight report on the *Future of Food and Farming* (2011), which was jointly commissioned by DFID and Defra, has had wide international impact.

19. The Department of Health (DH) supports scientific capacity building in developing countries through their role as secretariat for the cross-Government Health agenda through the Global Outcomes Framework. Examples of DH activities to assist scientific
capacity building include: the development of e-learning packages and training materials for health professionals outside the UK; international knowledge sharing and awareness events and overseas secondments for shared learning purposes.

20. DH bilateral work provides significant opportunity for capacity building, including capacity building to support the science behind the reform and development of health care systems in countries such as China, Brazil, India and South Africa.

21. The UK supports the conservation and sustainable use of global biodiversity predominantly through the Darwin Initiative. This small grants programme, which is jointly managed by the Department for Environment, Food and Rural Affairs (Defra) and DFID, funds projects between UK institutions and developing countries and has supported over 700 projects in 156 developing countries since 1992. It aims to share UK expertise in conservation and scientific techniques with host countries, and has seen long-lasting legacies established in developing countries benefitting better scientific evidence on native biodiversity, more effective conservation management and enhanced capacity building in the host countries benefitting both individuals and communities.

22. The UK is also working to address global research challenges in the area of animal health. Defra is leading an EU-sponsored strategic global alliance, funded under the Seventh Research Framework Programme (FP7) that will promote the coordination and cooperation at international level of animal health research programmes, in particular infectious diseases including zoonoses.
Chevening Scholarships

23. The Foreign and Commonwealth Office (FCO) run the Chevening Scholarships scheme which offers scholarships to citizens from over 100 countries. Since its establishment in 1983, thousands of Chevening scholars have studied, and continue to study, a wide range of science and technology related courses. FCO now have an active scholarship programme in all its relevant missions. The success of the programme means that there are now over 35,000 Chevening alumni in total, the majority of whom live in countries which are eligible for Official Development Assistance. The Chevening Scholarships scheme is building networks with future leaders and decision-makers in science and technology as well in a range of other fields including international relations, economics, media and law.

24. The Science and Innovation Network (SIN) is jointly run by FCO and the Department of Business, Innovation and Skills (BIS). The network consists of around 90 staff, based in 40 British Embassies, High Commissions and Consulates, across 25 countries around the world. SIN promotes strategic partnerships between UK and international science and innovation communities to enhance research, business and policy interests, which helps to contribute to research capacity building.

25. BIS supports research capacity through the British Academy International Partnership and Mobility Scheme. This is designed to foster long term institutional collaborations in the humanities and social sciences based on long-term links between UK and overseas scholars.

26. The Department for Energy and Climate Change (DECC) in collaboration with DFID has funded projects on climate change impacts on agriculture. These projects involve close partnership with
scientists in India and China. An important element of these projects has been the training of Chinese and Indian scientists on climate models developed at the Met Office Hadley Centre. In addition, DECC is in the process of finalising a Memorandum of Understanding (MoU) on energy research with the Government of Bangladesh. This MoU will include a significant element of capacity building in Bangladesh on energy policy, greenhouse gas inventory and energy modelling. Finally, DECC is supporting the establishment of a Low Carbon Energy for Development Network which brings together leading energy institutes in the UK and will develop a programme of bilateral projects on energy with developing country academic institutes. The expansion of bilateral projects will directly lead to enhancing scientific and technical capacity in these countries.

ii) How should UK support for scientific capacity building in developing countries improve?

27. In 2011 the DFID external Research Advisory Committee of distinguished academics, chaired by Sir Leszek Borysiewicz FRS FMedSci (Vice-Chancellor of Cambridge) reviewed approaches to capacity strengthening in research following an internal review of DFID’s research capacity initiatives. Several major themes came from this, including that trying to achieve capacity strengthening only through research consortia was likely to lead to uneven results. The considerable time needed to plan and execute good capacity strengthening is a significant issue where there have to be limitations in administrative budgets. DFID is therefore committed to trying to concentrate on a limited portfolio of things it can do well, taking account both of need, its own comparative advantage, and what others are doing in a crowded field. There is a relatively poor evidence base on research capacity strengthening (in all areas, not just those funded by the UK Government). DFID is building a better evidence base by:
A. Commissioning seven systematic reviews by discipline to provide a baseline on evidence of effective capacity interventions at the institutional, organisational and individual levels. The reviews will cover the following disciplines: agriculture health, education, climate change, environment, economics, social and political science.

B. Commissioning a research programme to (a) develop a better understanding of research capacity strengthening as a process; (b) develop a monitoring framework (with indicators) and impact evaluation strategy that would apply across the different disciplines; and (c) assess research capacity gaps by discipline and geographic region to inform priorities.

Question 2: What are the most effective models and mechanisms for supporting research capacity in developing countries?

28. The evidence base on research capacity strengthening remains thin. DFID is helping to address this gap (paragraph 25).

29. The threefold approach to research capacity strengthening (paragraph 4) is probably the most effective. This approach has evolved significantly from a narrow focus on training and fellowships to dealing more systematically with the capacity of individuals, organisations and the broader enabling environment within which they operate to undertake research.

30. In many developing country research organisations these three elements are not aligned. Where staff are trained, organisational structures may inhibit performance through top heavy or ineffective management. And even when research departments or universities are well structured and well managed, performance may still be poor due to weak incentive regimes (arising from low pay, nepotism in appointments and promotions, the absence of effective discipline, lack of commitment to research and culture of the organisation, etc).
31. It is increasingly recognised in the academic and practitioner literature that turning individual competence into organisational research capacity requires institutional change. This is complex and there is no one-size fits all solution. As a result, DFID uses a range of different approaches to capacity building, including:

A. Research partnerships: between southern researchers/research institutions and international researchers. An example is

Sustainable Agricultural Research for International Development (SARID) and Combating Infectious Diseases in Livestock for International Development (CIDLID)

32. These two programmes focus on improving capacity in plant breeding and biotechnology by strengthening North-South partnerships. It has supported 32 research collaborations between UK Research Institutions and Southern Universities and Institutions in Ghana, Kenya, Tanzania, South Africa, Senegal and Uganda. Alongside the research, targeted training at post doctoral, PhD and MSc levels responds to specific gaps in research skills

B. Direct training and mentoring: through formal and informal training schemes such as internships, PhD programmes, and research methodology and uptake training, etc. Examples include:

Tropical Disease Research Special Programme (TDR)

33. The WHO/UNDP/UNICEF/WB Tropical Disease Research Special Programme’s purpose is to strengthen research into the most neglected tropical diseases and to provide training and capacity building for developing countries to develop and implement new and improved disease control approaches. It has been responsible for training many hundreds of scientists and decision makers from a wide range of developing countries over the past three decades.
Developing Partnerships in Higher Education Programme (DelPHE)

34. The UK Government supports scientific capacity building in 25 priority countries through the Developing Partnerships in Higher Education Programme (DelPHE), delivered in partnership with the British Council. The programme supports links between universities and institutions which build capacity in science and technology related knowledge and skills. DelPHE supports:

- 22 partnerships South/South partnerships
- 178 North/South partnerships (68% Africa, 32% Asia)
- 68 partnerships linking two or more countries
- Recent evaluation confirms that as a result of DelPHE, 128 departments are producing internationally recognised research.

35. Examples include The African Partnership for Public Health which is led by South Africa, and linked with the UK (University of Strathclyde), Kenya, Malawi, Tanzania and Swaziland. In Iraq 14 Higher Education institutions throughout Iraq have benefitted from 35 partnerships with UK and other universities, and a significant number of these partnerships are focused on science; De Montfort University and Kerbala University are working together to develop a forensic science curriculum; Reading University is supporting Diyala University to restore teaching expertise in its Chemistry Department.

36. With DFID support, the Commonwealth Scholarships Commission (CSC) runs a range of scholarship and fellowship schemes which enable people from the Commonwealth’s developing countries to pursue studies or professional development with UK institutions. Of 2,860 new awards made in the four years from 2007-10, 36% are classified as being in science and technology. A further 9% took up awards classified as Agriculture Forestry, Veterinary Science and Environment, and a further 15% in Medicine, Dentistry and Public
C. Core funding of southern research institutions or regional organisations as a means to support well managed research institutions and regional networks. An example includes:

**Association for Strengthening Agricultural Research in East and Central Africa (ASARECA)**

37. The absence of strong and well-resourced agriculture research organisations in Africa is slowing down the generation and uptake of research needed to stimulate growth and reduce poverty. To address this gap, DFID has been supporting regional agricultural research organisations through its support to the Association for Strengthening Agricultural Research in East and Central Africa. DFID has enabled ASARECA to strengthen its organisational capacity to conduct and manage research. A 2011 evaluation by USAID highlighted the following outcomes:

- New technologies generated and disseminated,
- Evidence of impact in increased productivity, household incomes and food security,
- Application of more effective methods and partnerships in scaling-up agricultural technology,
- Harmonization of policies that have proven valuable in supporting market access and intra-regional trade, and strengthened institutional capacity of national institutions.

D. Support to regional capacity strengthening bodies that target specific disciplines and provide technical support to university departments and manage competitive grants. For example:
Partnership for African Social and Governance Research

38. African social science institutions are in the words of the Commission for Africa Report in “a state of crisis”, reflected by diminishing resources, declining academic standards, falling outputs and limited engagement in domestic policy formulation. This programme has been designed to strengthen the capacity of African universities and research institutions; produce relevant governance and social policy research; enhance university curricula; and strengthen demand and capacity for research uptake in Africa. It includes a collaborative Higher Education Programme combining a focus on social science research with public policy. Sixteen African universities from nine countries are involved in what is effectively new academic terrain in Africa. In addition, it funds an Africa-wide research programme through competitive grants that are designed to support teams of African researchers from different organisations (universities, think tanks, research capable NGOs) rather than a focus on individual research training.

Question 3: How does the UK monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?

39. Strengthening research and science capacity in developing countries is a long-term issue and it is widely considered a difficult area to assess - reflected for example in the conclusions of the joint Academy of Medical Sciences/Royal College of Physicians/Wellcome Trust meeting in November 2011 on building institutions through equitable partnerships. However, it is possible to track outputs, and longer-term outcomes. For this, the UK Government through DFID has guidance on design and monitoring of research capacity strengthening programmes. In line with this guidance, all programmes with a significant capacity component are required to conduct
institutional assessments; develop research capacity strategies; collect baseline data; and monitor progress annually.

**Question 4: What role does DFID’s CSA play in determining priorities and in the development and assessment of capacity building policies?**

40. The CSA Prof. Christopher Whitty, supported by the Deputy CSA Prof. Tim Wheeler, has direct oversight of priorities in capacity building through delegated authority for the central research budget which funds many of the science capacity strengthening activities. Additionally they, or some of DFID’s Senior Research Fellows seconded in from academia, are involved in wider DFID strategy on science including capacity strengthening, and the CSA sits on the Development and Investment sub-Committees of the Management Board.

**Question 5: How are government activities co-ordinated with the private and voluntary sectors?**

41. The GO-Science has the mandate to co-ordinate cross Whitehall efforts in areas of Science and Engineering, under the leadership of Sir John Beddington. The relevant CSAs meet regularly (typically weekly) informally, and in formal meetings. DFID has a Civil Society Department which coordinates with NGO and other civil society organisations, and an International Division which coordinates with multilateral groups such as CSC and UNESCO, which sit in the same general directorate as the DFID CSA and Chief Economist. The UK Collaborative on Development Sciences (UKCDS) provides a forum through which both Government, arms-lengths bodies such as Research Councils, and major private science foundations (Wellcome and Gates) coordinate their activities. Internationally there is also the International Forum of Research Donors (IFORD) which includes
other Governments and private organisations working in this area such as the Rockefeller, Hewlett and Ford Foundations.

**Acronyms and abbreviations**

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Department for International Development

19 December 2011
Written evidence submitted by Dr Thomas R Shelley (Int Dev 01)

International Development

Possible improvements to the way DfID works,

Ever since I was at Cambridge in the late 1960s and early 1970s, I have been involved with the problem of improving education and development in developing countries and have to say that while many worthy educated British people have done much to help, activities by British Government agencies have always been something of an irrelevance. In my various experiences, I never heard of anything the British Government had achieved, and whenever I have tried to involve DFID or its various predecessors, it has always been, for some reason, outside their remit.

1. Recycling text books and scientific equipment.

At Cambridge, I used to run the University of Cambridge branch of an organisation called World University Service. In my third year as an undergraduate in 1967 I hit on the idea of getting students going down, who could not be bothered to either sell or take their text books with them, to donate them to us. I then sorted through them and selected those that were worth sending to universities abroad, selling those that were not to be sent and using the money raised towards paying the shipping cost of the rest. I also started collecting unwanted laboratory equipment, and with the help of the London office of WUS, started collecting and shipping that too. As far as I know, nobody did this work after me, yet when I later went to work in Iran as a professor, I found that shortage of text books was a major problem for my students, which led to the university I was working in buying a printing press to produce pirated copies of some of the books.

Nothing has improved since. My wife is presently in her last year as a science teacher at a local school in Kent and told me that they throw lots of science text books away every time they change syllabus. I asked DfID if they had some means of sending donated text books and equipment to schools and they responded that it was not part of their remit. I have since made an arrangement through a retired BBC film director to have such text books and what equipment I can find shipped to Tafo in Ghana, where their schools and colleges have no books and no equipment except that which the film director has managed to find for them. But when my wife retires at the end of this school year, once again, all such surplus text books will go into skips for landfill.

I really think that DfID could help by using the power of being a government agency to collect up and ship unwanted science text books and equipment to institutions in Third World countries which presently have nothing. This has to be a better use of these materials than sending them to landfill, which is the fate of most of them at present.

2. Volunteer engineers aiding research and development

My wife and I have made various visits to Pakistan at our own expense. On one particular occasion in August 2008, we were guests of Mr Rastgar, head of the Engineering Development Board, and he arranged that I give a series of lectures on how Pakistan could develop green solutions to their energy needs. These were very well received and he and we came up with a scheme to organise this
research in Pakistan, and encourage retired engineers from the UK to come and give their time to assist it. We found that German and Russian semi retired engineers and professors were being brought in - we met some of each - but could not interest anyone in the UK in this idea. Again, if DfID cared to organise such schemes, where semi retired experts were shipped out to countries which needed them, this could be of great benefit, and help the UK sell not a few exports. The German we talked to was there with his expenses met by local companies, but not paid a salary, and regarded the visit as a holiday. He was staying as a guest in Mr Rastgar’s residence while the Russian professor we met at a university in North West Frontier Province was being paid, but not much, and said he was there because he was enjoying the warm climate. I regret that we shall not be making any more visits to Pakistan in the near future after an attempt in July 2011 was made to rob us at gunpoint, and then murder us the following day, possibly connected with a terrorist organisation headquartered in London and under police protection here.

While we are reluctant to go again to Pakistan until the security situation improves, we feel that we could do a very useful job in some other country in the same sort of way, and know there are many others like us, who would also be willing to give some other country the benefit of skills acquired during a lifetime, which are no longer required in the UK. I am a chartered engineer, and my wife Rizwana is a chartered physicist.


12 November 2011
1. The STEPS (Social, Technological and Environmental Pathways to Sustainability) Centre is an interdisciplinary global research and policy engagement centre uniting development studies with science and technology studies. Our work addresses two vital global challenges: linking environmental sustainability with better livelihoods and health for poor people; and helping science and technology work for poverty reduction and social justice. The STEPS Centre is based at the Institute of Development Studies and SPRU Science and Technology Policy Research at the University of Sussex in the UK. We work with partners in Asia, Africa, Latin America and Europe and are funded by the Economic and Social Research Council. Further details are available at: www.steps-centre.org

2. The STEPS Centre believes the UK Government can improve support for scientific capacity building for science, technology and innovation in developing countries in a number of ways and we welcome the opportunity to submit evidence to this inquiry. In summary, we believe investment and support for sustainable capacity building activities must move beyond a focus on elite science and so-called ‘centres of excellence’ to support science that works more directly for diverse social and environmental needs (STEPS Centre 2010). To that end, the inclusion of groups outside of mainstream science, such as civil society organisations, local entrepreneurs and small businesses, in the scope of capacity building is vital, as is extending beyond technical to encompass social dimensions of innovation. We would particularly like to address points 1, 2, 4 and 5 in the terms of reference for this inquiry and have a number of recommendations to make.

3. Many recent policy statements concerning science, technology, innovation and development have emphasised the creation of ‘centres of excellence’ in developing countries as a key goal. These are seen as a means to enhance science and technology capacity in developing countries, and hence, so it is argued, promote linkages between science, technology and development (Leach and Waldman 2009). Advanced countries provide support to the centres through funding and skill provision.

4. It is beyond doubt that developing countries need to build and retain scientific expertise and to foster top quality science through new partnership arrangements. And, in part, centres of excellence have been invaluable in shifting the centres of gravity in science, technology and innovation capacity from north to south. But, a universalised, a-political notion of capacity and excellence which responds to globalised ideas of economic progress has been fostered. We believe a notion of capacity which responds to the diversity of development needs and contexts would be preferable. To do this, there is a
need to go beyond – or at least to complement - centres of excellence with a range of principles and actions

5. We believe the transformative power of science and technology can be harnessed more effectively to address social justice and poverty alleviation. But first the benefits of innovation need to be shared more widely and equitably; innovation must be organised in ways that are networked, distributed and inclusive, involving diverse people and groups, including those that are poor and marginalised; effective models and mechanisms for supporting sustainable research capacity are needed; and government activities must become more aligned with the local needs and priorities of diverse groups. Capacity building for science, technology and innovation must begin to focus on supporting science that works directly for diverse social and environmental needs, and in relation to specific sustainability goals.

6. It is worth investigating what is meant by the phrase ‘capacity building’. In the development context, ‘Capacity development...seems to have become a catch-all that incorporates just about any form of technical assistance, and which appears to be a rather neutral, value-free form of engagement between development actors’ (Taylor and Clarke 2008: 6). There is often little specification of ‘capacity of whom to do what, to what ends?’ – i.e. little consideration of the directionality of science and innovation (towards sustainability goals) - and its particular distributional effects – that capacity building might assist. We believe the introduction of this focus is urgently needed. However, what one person sees as scientific excellence another may see as, at best, irrelevant or, at worst, misconceived and damaging. Science, technology and innovation have tremendous potential for development, but there are also pitfalls and unexpected consequences. Dealing with these, in conjunction with the types of problems experienced by today’s society and influenced by globalisation, climate change, and other unprecedented processes, requires a broadening of the notion of excellence and a re-evaluation of who the experts are.

7. Issues of power and social relations should also be considered in relation to science and innovation capacity development. When building international partnerships for supporting science and technology capacity in the south, the imbalance of power between developing countries and highly-funded international institutions is rarely considered. However, ‘systemic’ approaches for understanding and supporting capacity – as outlined by the Institute of Development Studies-based Capacity Collective – attends to (a) individuals’ abilities to construct, share and apply useful knowledge; (b) organisations’ abilities to learn, adapt and manage change effectively, and (c) the dynamics of power that underlie relationships between individuals and organisations, and which shape access to and use of knowledge, learning and performance (Taylor and Clarke 2008:7)

8. If capacity is defined in terms of ‘useful’ knowledge, new avenues are opened up for exploring ‘usefulness to whom, and for what’. This would enable a diversity of need and context, and directionality (towards specific sustainability goals), to be addressed, and for

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the types of knowledge and learning that might be appropriate to be investigated. And those types of knowledge and learning might look very different to those promoted through existing ‘centres of excellence’.

9. Capacity building needs to move beyond technical elites in large international, state and commercial organisations in order to support and harness the energy, creativity and ingenuity of users, workers, consumers, citizens, activists, farmers and small businesses. For this to happen, the definition of scientific excellence needs to be broadened out to encompass interdisciplinary knowledge, practical expertise and users’ ways of knowing. Particular, normative directions of innovations and development pathways – directions towards specific sustainability objectives – need to be taken in to account.

10. The training of science and technology experts must continue. But alongside this, local entrepreneurs, citizen groups, small businesses and other players in the innovation system should be included in the scope of capacity building. These groups are often left out of the equation when thinking about expertise, excellence and innovation.

11. Capacity building investments should be focused on enhancing the ability of citizens and users to engage actively in innovation processes, not just as passive recipients but as active users, creators and inventors. It has become evident that citizens can innovate – on both local and larger scales - without centralised, top-down organisation. The practices, ingenuity and passion of citizen networks and social movements to innovate needs to be fostered. They should be supported to facilitate the sharing of technologies, practices and wider experiences and learning. Capacity support should be offered to civil society networks and social movements to allow them to engage with national and international political debates about science, technology and innovation.

12. Evidence is emerging of practical examples where approaches to innovation address these principles of direction, distribution and diversity, and harness poorer people’s own innovative capacity. Capacity-building efforts need to focus on creating the conditions in which this kind of process can flourish.

13. For example, recent approaches to Community-Led Total Sanitation highlight the role of bottom-up innovation in addressing local challenges. Sanitation, previously neglected in much development funding, is now enjoying increased support. In contrast to many top-down sanitation projects, community-led total sanitation (CLTS) is an example of an alternative approach that takes communities themselves as the point of departure. This originally began in South Asia and involves the facilitation of a participatory process in rural communities whereby residents come to analyze and reflect on their defecation practices and their consequences in terms of hygiene and health. In numerous cases, this has triggered a change in mindset in which villagers embrace the desire to eliminate open defecation completely. Thereafter, they have developed an array of locally appropriate, innovative, social and technological arrangements for sanitation to achieve this goal – for instance, combining low- cost, self-built latrines with peer pressure to ensure that people use them. CLTS has now spread throughout large areas of Asia and Africa, with varying degrees of success. A massive diversity of technological designs has emerged, adapted to local conditions. Widespread sharing of local innovations and experiences, and ongoing
research, are paving the way for further improvement geared towards greater sustainability. This emerging second ‘wave’ of CLTS emphasizes greater diversity of CLTS pathways adapted to particular climatic, ecological and cultural settings and greater attention to distribution within as well as between communities.4

14. A second example highlights the role of innovative marketing arrangements in meeting particular technology distribution challenges.5 The social enterprise Scojo designs and produces low-cost eyeglasses for people with age-related vision problems. In the vibrant markets of South Asia, it has established distribution systems or linked with other organizations that have a local distribution network. In Bangladesh, Scojo is working with BRAC, a very large non-governmental organization (NGO) with a major health program, which has trained an extensive network of village health volunteers. To motivate continuing involvement, BRAC also identified a need to ensure that this volunteering helps to maintain a livelihood in a context where there are increasingly other opportunities for the volunteers to earn a living. Thus, Scojo is filling an important need in rural populations for the distribution of low-cost eyeglasses whilst also providing income to BRAC’s health volunteers, effectively linking need and demand through an innovative organizational arrangement.

15. The example of participatory plant breeding in marginal environments highlights the value of bringing technology users centre stage in shaping innovations.6 In contrast with the convention of breeding for optimal environments, the innovative CIMMYT-led African Maize Stress (AMS) project, for instance, developed new methodologies for diverse ‘managed stress’ conditions. The research team employed a participatory varietal-evaluation methodology popularly known as ‘mother and baby’ trials and went on to instigate a second stage of farmer participatory field research. Starting with the concerns of the most routinely marginalized groups such as women and resource-poor farmers, involving them centrally in designing and implementing the selection and testing of different plant varieties, can enable context-sensitive adaptation and shaping of technologies – paying attention to their social as well as technical dimensions.

16. One way of helping to foster the inclusion of citizens and local groups is to extend capacity-building towards ‘bridging professionals’ who are able to link technical expertise with particular social, ecological and economic contexts. Bridging professionals try to marry ideas of scientific excellence with other development challenges. There are a number of initiatives and centres emerging in developing countries that respond to this new challenge of capacity-building; one example is the Victoria Institute of Science and

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Technology established by Calaestous Juma in Kenya. There are also roles for overseas training. For instance there are several new masters’ degrees in the area of science and technology which look at how science and technology can be developed to meet the requirements of marginalised people. For instance, the Institute of Development Studies, at the University of Sussex, runs a Masters in Science, Society and Development and Maastricht University, in Amsterdam, offers a one year MA programme entitled Governance and Cultures of Innovation. Both courses recognise the needs to: (a) produce experts who are ‘able to deal with the science-technology-society relationship in a reflexive and politically conscious way’; (b) combine different disciplinary approaches in order to grapple with – and ultimately bring together – diverse perspectives, historically-bounded disciplines, theoretical insights and practical experiences; and (c) direct science, technology and innovation towards addressing questions of poverty, social justice and environmental sustainability.

17. New priorities should be set for training – including key reforms to tertiary, further and higher education in the area of science, technology and development. New or reoriented existing institutions are needed that actively link science and technology to located needs and demands. And those institutions should greater provision for local community engagement in tertiary, further and higher education, as well as building new learning platforms, virtual and face-to-face, and wiki spaces for innovation support that enables more inclusive, networked and distributed forms of innovation.

18. Informing, developing and assessing capacity-building policies of this kind – that foster innovation for sustainability and development – must extend beyond the current role played by DFID’s Chief Scientific Adviser. The latter has proved effective in emphasising, and helping to chart a course for, capacity building that focuses on excellence in technical dimensions of science. However greater integration of social, citizen-led and ‘bridging’ perspectives could benefit from expertise from a range of others, including social development advisors within DFID, and a range of civil society organisations and interdisciplinary research institutions both in the UK and internationally.

ESRC Social, Technological and Environmental Pathways to Sustainability (STEPS) Centre

5 December 2011
1. The importance of sustainable weather and climate services in developing countries is increasingly recognised by both DFID and the wider international development community such as the World Bank, Asian Development Bank and the UN Development Programme. Ultimately, weather and climate security underpins food and water security. Weather and climate information provides a crucial contribution to the achievement of national and international development goals: helping vulnerable communities prepare and respond to both natural and man-made disasters and increasing the ability of communities to adapt to future climate change. This contributes to the achievement of the Millennium Development Goals and is in particular aligned with the poverty reduction and environmental sustainability agendas. Developing national capacity in the science of climate change prediction is also an important mechanism to assist nations to participate fully in UNFCCC negotiations and contribute to bodies such as the IPCC.

2. The Met Office works in partnership with DFID, as well as national governments and other donor organisations, on a number of capacity development initiatives to strengthen the application of weather and climate science around the world. As part of the Public Weather Service the Met Office also supports National Meteorological Services (NMSs) in developing countries through the World Meteorological Organisation’s Voluntary Cooperation Programme (WMO VCP). This enables those NMSs from areas of the world where observations are sparse, such as Africa and the Pacific, to produce weather and climate information and disseminate it to other meteorological centres around the world. This information assists in the monitoring of global climate change and is used in weather and climate prediction models to improve forecast accuracy. This is a mutually beneficial arrangement that ensures that the Met Office and the global meteorological community have access to the best possible data for weather forecasting and climate prediction. In turn, the VCP assists developing country NMSs to exploit forecasts from major centres, such as the Met Office, and to translate them into a national context.

3. Through this experience the Met Office recognises that the challenge of translating science, within a developing country context, to achieve real development outcomes is often as great as the completion of the science itself. For example, a weather forecast model might accurately predict the trajectory and intensity of a tropical cyclone, but if this information is not communicated to the impacted population and emergency responders in a meaningful manner and they are empowered to act upon it, the forecast is of limited value. In this respect the Met Office is able to draw upon its operational experience of working with central government, disaster responders, local authorities, media, private sector, public, civil society and other stakeholders in the UK, to support its partners in developing countries. Based upon Met Office experience in the UK, partner NMSs are able to identify the relationships and processes necessary to deliver sustainable and effective weather and climate services tailored to the needs of their own nations.

How does the UK Government support scientific capacity building in developing countries and how should it improve?

4. The DFID-Met Office Climate Science Research Partnership (CSRP) is a current initiative to improve both the science and application of monthly to inter-annual prediction over Africa. The programme draws substantially on in-depth intelligence gathering with African NMSs, NGOs and other bodies to understand specific vulnerabilities and needs. A major component of this programme is a fellowship scheme allowing scientists from partner institutions in Africa to conduct research on key climate science questions for the region and to collaborate with Met Office scientists working on similar themes. The scheme is centred around a secondment to the Met Office which has helped to build
much greater understanding and cooperation between the UK and African climate science communities.

5. DFID has supported the development of PRECIS (Providing REgional Climates for Impacts Studies) on an ad-hoc basis over a number of years. This is a state-of-the-art regional version of the Met Office Hadley Centre climate prediction model that can be run on a PC. PRECIS allows scientists to take global climate change information and “downscale” the data for their region. This strengthens understanding of the likely impacts of climate change on a country, or regional, scale. Crucially, PRECIS is a tool that allows scientists from developing countries to get involved with climate science, investigate the strengths and limitations of climate predictions, and develop knowledge on how these predictions can be applied to inform decision making. Scientists from over 100 countries have been trained and are supported in the use of PRECIS.

6. The Climate Modelling in Bangladesh project is a collaboration between the Met Office Hadley Centre and the Bangladesh University of Engineering and Technology (BUET) which is supported by DFID Bangladesh. This project is enabling the Bangladeshi climate research community to produce their own regional climate projections, using PRECIS. A similar DFID funded initiative in China involves climate model downscaling for climate impacts and adaptation research in partnership with Chinese institutions. The work completed in Bangladesh and China serves as a model for how climate scientists can be engaged in a partnership at a national level, an approach which could be applied in other countries and regions.

7. The Met Office is also engaged in a wide range of capacity development initiatives which are not funded by DFID. Through the WMO VCP, the Met Office is supporting developing country NMSs to provide sustainable weather and climate services for their government and citizens. Examples include:
   - Training and forecast products to support severe weather forecasting. This includes running weather forecast models specifically for Africa. Most recently the Met Office has supported a WMO coordinated project to disseminate weather warnings to fishermen on Lake Victoria. Part of this support has been to set up a 4km weather forecast model which is able to resolve small scale thunderstorms as they develop and move across the lake.
   - Equipment and training to assist NMSs to provide weather presentations for their national television and radio networks. This improves visibility of the NMSs with their national government and wider stakeholders.
   - Equipment, software and training to analyse and manage climate data, particularly for agricultural applications. This is beneficial to farmers in choosing crops and deciding on the best possible planting dates to optimise yield.

8. Under some donor funded initiatives, NMSs in developing countries are recipients of sophisticated technology without appropriate resources and training for ongoing maintenance, calibration and continued service delivery. Through the WMO framework, the Met Office and wider meteorological community are able to provide ongoing commitment and support, as well as address wider process and management issues, which are vital in ensuring long-term sustainability of services.

9. Working on these principles the Met Office also conducts capacity development initiatives for multilateral donor agencies and individual national governments. Examples include:
   - Establishing a small network of Automatic Weather Stations in Sierra Leone in partnership with the Sierra Leone Meteorological Department, UN Development Programme (UNDP) and UN Environment Programme (UNEP).
   - Secondment of an expert to Rwanda Weather Services funded by the Government of Rwanda to work with staff to enhance services, develop a sustainable growth strategy and implement training.
A collaborative study of the likely impact of climate change on water resources in the Nile Basin in partnership with UNDP and Egyptian Ministry of Water Resources.

10. Closer alignment and coordination of the wider activities undertaken by the Met Office and international meteorological community with the regional and national programmes of DFID could be an efficient way to make the best use of scientific capability to achieve development outcomes. This could be achieved through more regular engagement and communications activities.

11. The Met Office has good and regular contact with the DFID Research and Evidence Division and also engages with individual country DFID offices, such as DFID Bangladesh, on an ad-hoc basis. More systematic sharing across DFID could ensure that lessons learned by one department, or country office, can be utilised by other areas of the DFID network. For example the CSRP is a project that has been coordinated by the Research and Evidence Division, but effective application of the science and capacity development across Africa, to ensure that DFID’s investment in the CSRP realises its full potential, will require much closer engagement and integration with DFID’s regional and country offices.

**What are the most effective models and mechanisms for supporting research capacity in developing countries?**

12. The CSRP fellowship scheme is engaging African climate scientists in research on key climate questions and, in the process, advancing their professional development. The Met Office would advocate the inclusion of similar fellowship schemes as part of any future capacity development programmes. The CSRP has also supported training workshops at ICPAC (Inter-Governmental Authority on Development Climate Prediction and Applications Centre) based in Kenya, at ACMAD (African Centre for Meteorological Applications and Development) in West Africa, and SADC-DMC (Southern Africa Development Community Drought Monitoring Centre) in southern Africa. In these ways the CSRP is proving very effective in both strengthening the existing scientific institutions and working in partnership with African climate science community to deliver enhanced and relevant services tailored to the needs and vulnerabilities of their populations.

13. This partnership approach is also at the heart of the projects that have been implemented in Bangladesh. In this case the direction of the science is coordinated jointly by colleagues from Bangladesh and the UK ensuring that it is tailored and owned on a national basis. Closer partnerships of this nature could be an effective means of translating the science into real development outcomes in other countries and regions.

14. UK support for research capacity in developing countries is dependent on identifying those areas where the UK has demonstrable leading expertise, enabling in-country scientists and end-users to leverage the best science capability possible. With other parts of government, the Met Office engages in UK science partnerships with other leading academic institutions to coordinate multidisciplinary teams across a broad science base. This ensures that the best possible science underpins these key projects. A similar approach could also be applied in the capacity development field. Future initiatives like the CSRP could benefit from the inclusion of a range of academic institutions in a longer-term science programme.

**How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?**

15. Progress on initiatives such as the CSRP is reviewed regularly both by DFID and by an independent Steering Committee. The Steering Committee consists of international experts who meet regularly to review the reports and future plans of project. DFID also monitor a broad set of metrics that indicate the ongoing success of the partnership. This is consistent with oversight of similar capacity development projects that are being completed for other donor organisations.
What role does DFID’s Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?

16. The DFID Chief Scientific Adviser (CSA) and Deputy Chief Scientific Adviser (DCSA) both have an authoritative standing within the international research community in development. The DCSA holds a part-time position at the University of Reading where he is an active researcher in the field of agriculture and climate change. The DFID CSA is a member of the cross-government CSAC group of CSAs, ensuring regular dialogue with the Met Office Chief Scientist. This could provide a useful forum for the Met Office to more closely align its capacity development activities with DFID’s to ensure greater effectiveness and more efficient delivery.

Met Office

13 December 2011
Written evidence submitted by the National Physical Laboratory (NPL) (Int Dev 04)

1. Summary of key points

The UK is in a good position to exploit the strength of its Standards, Quality, Accreditation and Metrology sector not only to the benefit of Developing Countries but also to promote future growth in the UK economy.

2. About NPL

1.1 The National Physical Laboratory (NPL) is a leading UK research establishment with an annual turnover of £70m and a staff of 600. It is the largest science asset directly owned by BIS and occupies a unique position as the UK’s national measurement institute (NMI) sitting at the intersection between scientific discovery and real world application. Although sponsored by BIS, NPL also undertakes work for other government departments, notably Defra, DECC, MoD and DH. Its expertise and original research underpin quality of life, innovation and competitiveness for UK citizens and business:

- NPL provides companies with access to world-leading technical expertise and scientific facilities, assuring the confidence required to realise competitive advantage from the use of new materials, techniques and technologies;
- NPL expertise and services are crucial in a wide range of social applications – helping to save lives, protect the environment and enable citizens to feel safe and secure. Support in areas such as the development of advanced medical treatments and environmental monitoring helps secure a better quality of life for all;
- NPL develops and maintains the nation’s top-level measurement standards, supporting an infrastructure of traceable measurement throughout the UK and the world, to ensure accuracy and consistency.

3. How does the UK Government support scientific capacity building in developing countries and how should it improve?

3.1 Introduction

The World Trade Organisation recognises that one of the first technical capacities required by a Developing Country is the capacity for international trade. This requires a capability for Standards, Quality, Accreditation and Metrology (SQAM).

- Standards provide for the specification of products for trade
- Quality assures that products are fit for purpose
- Accreditation assures conformity to standards
- Metrology generally underpins the measurements necessary to show compliance with standards, legal aspects and specifications.

And all these generally depend upon the underpinning scientific capacity of the Developing Country.
A few years ago NPL took part in a workshop on Capacity Building in the SQAM Sector. A keynote address was given by Dr Laith Goonatilake, Senior Industrial Development Officer, Quality, Technology and Investment Branch of UNIDO. (He is now Director of UNIDO’s Trade Capacity Building Branch.) I include below an extract from his keynote address where the links to SQAM have been highlighted:

Developing countries have commodities but not products. The Technical Barriers to Trade agreement mentions assistance to Developing Countries, but in reality Developing Countries have not applied for assistance, nor have developed countries offered it. Developing Countries cannot take immediate advantage of opportunities. This gives rise to the following requirements:

- **There is a need for technical assistance** to market access through:
  - Institution building for trade policy where proof of conformity with market requirements is necessary, e.g. in Uganda – fish pesticide measurement, Sri Lanka – pesticide residues in fabrics.
  - Export promotion
  - Strengthening Trade Facilitation capabilities
    - Investment, Facilitation and Financial Flows (through UNCTAD)
    - International Agreements and Rules for Trade (through WTO)
  - Training and Human Resource Development
  - Creation of trade-related regulation/policy framework
  - All these factors would depend upon Supply and Development (Capacity and Competitiveness), Standards and Conformity Assessment Infrastructure (TBT, SPS), Customs Procedures, Transport and Documentation.

- **For technical assistance** there is a need to develop strategies for:
  - Competitive Manufacturing Capacity
  - Providing Conformity with Market Requirements
  - Connecting to the Market
  - Funding technical assistance
  - To link supply capacity and conformity.

At the same workshop DFID stated: Trade is of vital importance to developing countries – a one percentage increase in Africa’s share of world exports is equivalent to around five times the amount provided to the region through aid and debt relief.

Evidence of the importance of SQAM to Developing Countries can be found at: [www.sadc.int/english/regional-integration/tifi/sqam/](http://www.sadc.int/english/regional-integration/tifi/sqam/) which sets out the priority given to SQAM by the South African Developing Community (SADC).

### 3.2 Current Government Support

The UK has a particularly strong SQAM sector and this provides a valuable resource for development assistance. The UK SQAM sector is embedded in various national institutions, and in some cases parts of government, including: National Measurement Office, National Physical Laboratory, British Standards Institute, United Kingdom Accreditation Service, Trading Standards Institute.
These organisations are often approached by Developing Countries and by agencies funding their development, and some training is provided where budgets allow. However, DFID have not to-date to our knowledge directly supported any overseas development work by the UK SQAM sector.

3.3 Opportunities for Improvement

The SQAM sectors of some other countries in Europe, for example France and Germany are funded by their governments to support the development of SQAM sectors in Developing Countries. For example PTB, the German equivalent to the UK NMO and NPL, has jointly undertaken projects with UNIDO and the International Organisation of Legal Metrology in West Africa providing training and planning workshops, and the German Government also provides funding for PTB experts to go to the region.

We give below a summary of the PTB International Technical Cooperation Programme as described by SADC.

Delegates were informed about the PTB’s organisational structure, funding, its role as the National Metrology Institute and in the worldwide securing of correct measures and measurements and PTB’s role in international technical cooperation. Over a period of four decades, more than 70 countries have been assisted with more than 130 million Euros in setting up metrology standardization, testing and quality (MSTQ) infrastructures.

To achieve this, PTB has cooperated with many specialist institutions and organizations in and outside Germany. The main German partners have been the Federal Institute for Material Research and Testing (BAM), German Institute for Standardization (DIN), German Calibration Service (DKD), Society for Electrical Engineering, Electronics and Information Technology (VDE) to name a few.

Outside Germany, PTB has cooperated with international organizations such as BIPM, ILAC, ISO, OIML, UNIDO and WTO and with national institutions such as INMETRO (Brazil), KEBS (Kenya), NIST (United States of America) and SABS (South Africa). Although PTB projects initially focused on the establishment of metrology institutions, the focus being demand driven has shifted over the years towards the establishment of regional metrology, standardization, testing and quality (MSTQ) structures in order to enable developing countries to effectively implement regional trade agreements and to create regional markets.

Projects are currently being implemented in Africa, Central/South America, Asia and the ex-Soviet Union countries. Adequate technical infrastructures in developing countries are key for competitive production, conformity assessment procedures and in implementing trade agreements hence PTB’s focus and preparedness to continue its technical cooperation in this regard.

As well as providing important benefits for the Developing Countries, enabling them to export more goods, it also brings benefits to the donor countries. NPL staff often visit the emerging SQAM organisations in Developing Countries and are struck by the large amount of for example German manufactured equipment in their national laboratories. These national laboratories are providing leadership for their countries, and it is reasonable to expect that emerging technical businesses in these countries are likely to follow the purchasing choices of their national laboratories.

As important will be the relationships that are developed through the training given; such relationships are key to the future development of a strong trading partnership with Developing Countries.
The UK is in a good position to exploit the strength of its SQAM sector not only to the benefit of Developing Countries but also to promote future growth in the UK economy.

National Physical Laboratory

13 December 2011
How does the UK Government support scientific capacity building in developing countries and how should it improve?

1. The UK Government supports scientific capacity building in developing countries in a variety of ways either directly through DFID, albeit on a limited scale, or through various agencies such as the Medical Research Council, the Royal Society, the British Council and the Commonwealth Scholarship Scheme. It should also be noted that some funders of scientific capacity building are not tied to government and do extremely valuable work. The Wellcome Trust is one such example.

2. However, scholarships and support that come from such sources can be very difficult for young scientists from developing countries to access successfully, mainly because there are relatively very few such schemes and the students face fierce competition from top students from very well-funded western countries like the USA, Canada, Australia, Japan, where their training has provided them with a stronger background and skill set to compete for these scholarships. With the emphasis on research excellence in UK universities, and this is of course has to be supported, there is however not always an incentive to recruit young scientists from developing countries onto these schemes. It is our view that if we really are to make difference to raising sustainable research capacity in developing countries, there has to be established a specific funding scheme, generously funded and specifically targeted at the poorest countries of sub-Saharan Africa and Asia.

3. It is the case that there has been a lack of interest by the UK Government in supporting the tertiary sector in developing countries and this has thus contributed, perhaps unwittingly, to the erosion of research capacity in these countries. Up until the 1990s, there had been considerable support for tertiary education in developing countries, and, as a result, many countries had strong universities, a vibrant research culture, an adequate scientific capacity and excellent academic links with UK institutions. However, a refocusing of British support in favour of primary, and to some extent secondary, education has had a hugely damaging effect on university education in many developing countries, and hence on those countries’ domestic research capacities. This was sometimes matched by reductions in support by governments in developing countries themselves because of national level budgetary pressures. The result has been an impoverished university sector in many countries, in which there is ironically a growing demand for tertiary education, but a limited capacity to provide it at an acceptable level of quality. In many countries this has led to the growth of a private university sector in which standards are frequently very poor, with little meaningful contribution to building research and scientific capacity.

4. The problem of hugely reduced research and scientific capacity in developing countries has at least now been recognised by some donors and some governments. This has very much come to the fore with the dominance of the MDGs, and the realisation that one of the key reasons that most sub-Saharan African countries are going to miss most of the targets is that there is a significant lack of domestic
scientific capacity to deliver them. President Kagame has observed that primary school leavers will make little or no impact on poverty reduction related to the MDGs, and the pressing need is for more well-trained researchers and scientists coming out of well-resourced African universities if the MDGs and other poverty reduction measures are to be achieved. In Tanzania, there is a commitment by government to building national science capacity in support of national development ambitions. Consequently, many donors are now giving greater priority to capacity building; recently, for example, SIDA announced the full funding of 43 PhD training scholarships for Rwanda explicitly to build sustainable research capacity within that country, and there are various EU programmes, such as the ACP Science and Technology Programme, which are also explicitly aimed at building scientific capacity.

5. There is still a marked deficit of opportunities for PhD level training for developing country scientists. To become an independent researcher capable of accessing his/her own competitive funding (a clear measure of scientific sustainability), the absolute minimum requirement of any credible applicants is a PhD. There is a huge wealth of scientific talent in developing countries, and often many BSc and/or MSc level researchers with great skills but few opportunities to advance their career through PhD training because few opportunities exist in their home countries for such training, the costs of doing so in a western country like the UK are prohibitive (here we charge circa £14k per year; by contrast, many EU countries like France and Italy, for example charge either no fees, or as little as 1000 Euros per year, for African students), and there are very few scholarship opportunities for these students anyway.

What are the most effective models and mechanisms for supporting research capacity in developing countries?

6. At the outset, there needs to be a very clear commitment by donors and recipient governments to supporting scientific capacity building as a key development priority. This commitment is not only to be enshrined in policy statements, but also has to be followed up significant financial input.

7. A very successful model, which was previously supported by the UK Government through schemes such as the Academic Links Programme, needs to be revitalised but significantly upcaled. Long-term partnerships between universities and institutes in developed countries and those in developing countries need to be promoted, built on trust and mutual support. Capacity building should be at the heart of such arrangements, with mutually agreed outcomes and targets, but with a clear recognition by donors that this is NOT a short-term fix, and that patience must be shown. Because the scientific capacity of developing countries has been allowed to wither so dramatically over the last two decades, the Committee should be under no illusion about the scale of the rebuilding task to be undertaken.

8. As well as training programmes for early career researchers to build capacity, there is an equally important need for mid-career researchers and scientists to have exposure to international research through two-way exchange programmes of students, supervisors, experts etc. This could also be most effectively achieved through
partnerships’ development between UK and developing world universities, research institutes etc, supported by DFID funding.

9. There is a need for investment in people at developing world universities and institutes to encourage them to stay and develop their career in their home countries, and to develop internationally competitive teams. This can be achieved through the increased availability of significant local grant funding, as the lack of such funding has been a major factor in encouraging many young scientists to leave developing countries to work and settle in Europe and the USA. In addition, the provision of some source of salary buy-out to allow local researchers and scientists the time and space to do research, instead of being burdened by large administration and/or teaching loads. All too often, shortly after graduating with a PhD, researchers and scientists quickly are promoted to more senior managerial positions in their institutions, taking them out of research. If research and scientific salaries, or other support mechanisms, can be funded, this will reduce this loss of expertise to the domestic scientific community. Equally, investments in the provision of technical support, the creation AND maintenance of good research facilities, and collaboration opportunities with UK mentors, where appropriate, will all help to create a supportive research environment in which local scientists will want to stay.

10. A potential model of how this might look is the Wellcome Trust Fellowship scheme for students from developing countries. This supports the best and brightest scientists from low income countries to develop their career in their home country, well financed, with the opportunity to concentrate on cutting-edge research and to develop deep collaborations. The Wellcome-sponsored ‘Afrique One’ consortium is an example of a scheme that is specifically designed to help build capacity through investing in promising early-career African researchers to establish themselves, along with their associated research group within their own country, supported by mentoring and in-country training by relevant UK experts.

**How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?**

11. We are frankly unclear how the Government monitors and evaluates the effectiveness of scientific capacity building, but suggestions for monitoring and evaluating include metrics such as evidence of the retention rates of young scientists in developing countries; evidence of changes in levels of funding for science in developing countries; monitoring of expenditure on science as a percentage of GDP in developing countries to assess government commitment; the development of an index of scientific outputs (papers), successful research grant applications by researchers specifically and explicitly as PIs; and measures of impact as seen through sustainable development interventions.

12. There is also the possibility of research assessment exercises (similar to the RAE/REF) across developing regions to assess the relative scientific strengths of institutions. This form of competition can drive up quality as happened in the UK following the introduction of the RAE over 20 years ago. However, given the costs associated with developing and managing such an undertaking, we would signal some
caution, given that such funds might be more usefully deployed to the central challenge of building scientific capacity in support of poverty reduction.

What role does DFID’s Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?

13. It is not wholly clear to us what role DFID’s Chief Scientific Adviser plays in determining priorities and in the development and assessment of capacity building policies. We do strongly feel, however, that there is considerable scope within the research budget of the Research and Evidence Division of DFID to embody research and scientific capacity building as a central element of any research grant proposals which it receives. This is essential for the creation of a sustainable research base in developing countries.

14. However, there needs to be a clear understanding developed of what the ultimate goal of capacity building should be, and this should be defined by appropriate stakeholders from developing countries, in collaboration with stakeholders from the UK, to give ownership and a clear sense of purpose and direction.

How are government activities co-ordinated with the private and voluntary sectors?

15. There has been a marked improvement in the way that government activities are co-ordinated with the private and voluntary sectors and there is clearly an opportunity to improve these still further. The success of the bioscience base in the UK is world-leading because of the support of the government (especially the Research Councils), the private sector (large pharmaceutical companies) and major charities (e.g. the Wellcome Trust and Cancer Research UK). A similar model could potentially be very effective in developing countries.

Declaration of interests
The Glasgow Centre for International Development (GCID) is an interdisciplinary research centre at the University of Glasgow with the remit to co-ordinate research and capacity-building activities in international development across all four Colleges of the University (Medical, Veterinary and Life Sciences; Science and Engineering, Social Sciences; and Arts), and mainly in collaboration with our partner universities and research institutes in developing countries. Most of these are located in sub-Saharan Africa. Given our remit, we have a keen interest in the outcomes and findings of the Inquiry.

Professor John Briggs
On behalf of the Glasgow Centre for International Development
University of Glasgow

14 December 2011
Written evidence submitted by David Strangway PhD, FRSC, OC
(Int Dev 06)

“We in Africa must either begin to build up our science and technology training capacity or remain an impoverished appendage to the global economy.” President Kagame Rwanda

1. I submit this response to the committee as a Canadian deeply interested in the development of capacity in Science, Technology and Innovation in African universities. I grew up in Africa, although I am Canadian. My parents were medical missionaries in Angola from 1927 to 1967. Theirs was a life in tropical medicine where they created and ran a major hospital that served Africans for many decades. In reality they were part of the capacity of that country at that time.

2. I have been on the faculty at MIT and subsequently was the chief of earth and planetary sciences for NASA during the Apollo missions to the moon. This was followed by the presidency of the University of Toronto and then of the University of British Columbia.

3. In 1998 I was the founding president of the Canada Foundation for Innovation. This was an organization funded by Canada’s federal government. This funded research facilities at Canadian universities in order to provide first rate research equipment. The universities had to find matching funds. To date the federal government has invested over $5 billion in this foundation. The purpose was to help Canada reverse its serious brain drain problem as we were losing many of our best academic researchers to the United States. Canada like other countries was pushing hard to be part of the emerging knowledge economy.

4. In 2000 the federal government took a further step to help close the brain drain gap. I was involved with the establishment and operation of a program of 2000 Canada Research Chairs to be placed at Canadian universities. These positions have also had a major impact on ensuring that Canada could retain and attract the best academic researchers. This continuing program is funded at $300 million per year.

5. In 2004 I founded a small not for profit private university focused on undergraduate students on Canada’s west coast. This liberal arts and science university opened its doors in 2007 and has now graduated its first class. Indeed it has already received the highest ranking of 700 universities in North America after interviewing 280,000 students in the US and Canada.

“We, the members of NASAC are convinced that a sustainable economic future lies in strengthening the continent’s S and T capacity”. Network of African Science Academies
Because of my early years and deep commitment to Africa, I have been developing a concept that is designed to use the Canadian experience and to help African universities build their research capacity. The idea is to find the funding to help African universities build their capacity to identify and take steps to solve the problems they have identified. The concept is to fund African Research Chairs to be held at African universities. This would help them to make a start on dealing with the brain drain problem. The brain drain problem in African universities is truly profound. There are more Malawian doctors in Manchester than there are in Malawi.

I have met with many organizations around the world but particularly in Africa. These include the United Nations, the African Union, the African Development Bank, the Association of African Universities, Agence Universitaire de la Francophonie, Association of Commonwealth Universities, La Francophonie, the Commonwealth Secretariat, the EU, OECD, and UNESCO. I have met with senior officials in several countries including France, the United States, Germany, Canada, Japan and several others. And of course I have met with representatives of several African countries and consulted with many African university vice chancellors. There is very wide support for the idea of building capacity in African universities to tackle the issues represented by the Millennium Development Goals.

What I hear over and over again is very strong support for the idea of building Africa’s research capacity and building an African base to deal with African problems. They are seeking investment in capacity for the longer term, rather than aid for short term projects. From this base of amplified capacity, they can then approach potential partners in the developed world. The new approach that they seek is investment, so that they can be in a position to follow their own agenda and seek the partnerships on an equal footing. In other words, they are fully aware of the issues that need to be addressed and would like to be asked where they see the priorities, rather than be told by the various aid agencies what their priorities should be. There is a universal demand to build capacity, so they can enter the competitive world of Science, Technology and Innovation (STI) for development.

The most frequent concern I hear over and over again, is about the UK positions and the role of DFID. DFID they report shows very little interest in higher education and research and in particular shows essentially no interest in helping developing countries build capacity. It seems from my many sources, that DFID and the UK have not yet crossed the line from aid to investment and remain patronizing in their approach to the developing world.

I have just been in South Africa which is one of the fast emerging economies. They have already taken steps to create a program of South African research chairs modeled on the Canadian experience. South Africa has created a program of 200 chairs as a major step to ensure they can keep their best researchers and/or attract good people from the diaspora or indeed from other jurisdictions.
11. I applaud the Committee’s thinking to look afresh at the UK approach to the investment needed by developing countries. Helping to build the long term capacity of the developing world, will give a lot more benefit to helping them participate in the 21st century, with its focus on the knowledge economy.

“The suggested concept is a timely and very worthwhile initiative and I would be pleased to lend my support towards strengthening African faculties and reversing the continent’s brain drain”. Kofi Annan, former secretary-general, United Nations.

David Strangway PhD, FRSC, OC
Kelowna, British Columbia, Canada

15 December 2011
How does the UK Government support scientific capacity building in developing countries and how should it improve?

1. In the health field, UK Government support for scientific capacity building through research is delivered mainly through MRC and DFID, with DFID providing much of the funds for MRC's developing country activities, as well as through smaller funding arrangements with other research councils. MRC supports two large and active research centres in Africa and research in other geographical areas through programme and project grants. The provision of core support to its overseas units is a major boon to these centres, and one which is much envied by other developing country research centres which have to struggle to cover their core costs through grant overheads. Core support provides a measure of scientific independence and means that a coherent research programme can be developed which is not always dependent on achieving the next grant, however uninteresting this is, to keep the centre afloat. This support needs to be sustained but the new model that increases the pressure on MRC centres to achieve additional support for specific research activities is a good one.

2. On the whole, MRC manages its developing country research portfolio reasonably well. MRC awards are generally made fairly using peer review and units and grants are monitored. MRC also has a good record in training. Training for many categories of staff is provided at the MRC's overseas units. This includes local training courses for more junior members of staff, including support staff, and also support for scientific staff to take higher degrees. The UK government also provides funds for support of excellent researchers and research leaders in East Africa. A good example of this is the MRC-DFID and EDCTP African research leadership schemes.

3. Some research is funded directly by DFID and it is less apparent that this is always done effectively. DFID has decreased capacity in technically qualified manpower in the health sciences and thus would now have difficulty in operating an open, peer-reviewed system with effective project monitoring as it did in the past. As a consequence it is likely that some projects of doubtful utility are being supported and that others are allowed to continue after the period when they should have stopped for lack of effective monitoring. However, DFID does bring a very important policy angle to the research table, which is different from the interests represented by the research councils, so it is critical that DFID's funding is maintained for research and related capacity strengthening. Increasing DFID's staffing in order to manage a research programme more directly and effectively would not be a popular idea at the present juncture but some of this work could effectively be outsourced to other agencies which have these skills such as MRC and the Royal Society among others, as long as the arrangements ensure that the policy-related aims of DFID research funding are maintained and safeguarded.

4. Apart from the critical support for capacity building via research, the UK government provides valuable scholarships to students via funding to the Commonwealth Scholarships Commission. These are mainly used for study in the UK, and to pursue distance learning Masters degrees, and are important as many of the degrees that the students take are either not available in their own country, or are not of sufficient quality. To improve this, the UK
government could sponsor students to take in-country courses, and to support the provision of external quality assurance for those courses. The best way to do this would be to link Universities in developing countries with Institutions in the UK and provide funds for some transfer of skills, technology, and support, to enable such universities to broaden their range of courses (see also under next section). This could include support for both students, and for lecturers/tutors within those institutions. Another way it could help would be to support student loan schemes for students to study in their own, or other countries. Many more people would be able to develop their scientific skills if the money was available (as loans) for them to access.

5. Strengthening capacity in scientific research should go along with building national decision-making capacity around the introduction of innovations such as new vaccines. This means support for countries in developing national capacity in gathering/assembling and evaluating data, as well as in using data in appropriate ways for decision-making. Ministry involvement and ownership is crucial for capacity building and ensuring that the evidence feeds into national policy deliberations. As an example of what can be done, a PAHO initiative is supporting universities (Centres of Excellence) in the PAHO region to do the gathering/assembling of evidence and evaluation of new vaccines, and has provided policymakers in the region with tools and workshops to do the analysis and decision-making.

What are the most effective models and mechanisms for supporting research capacity in developing countries?

6. There is no single model for supporting research capacity development in developing countries that can be guaranteed to work. Successes and failures have been achieved with many different models including institution to institution partnerships, large consortia, small collaborative research groups and links between individual scientists in the north and the south. Some of the advantages and disadvantages of different models of north/south and south/south partnerships were discussed at a recent meeting co-hosted by the RCP and Academy of Medical Sciences. The report of this meeting, which is reaching the final stages of preparation, would be a helpful contribution to this debate. Some common features of successful partnerships were identified as -

- the need to clearly identify the purpose of the collaboration at its outset,
- a need to ensure that all partners had something to gain from the collaboration,
- avoiding dominance by one partner, especially the northern one,
- identifying in advance mechanism for the exit of one or more partners if things are not working out.

7. Schemes which support long-term interaction and exchange between developing country and UK universities and research institutes are critical. Including South South as well as North South interactions within such schemes is often valuable. Developing research capacity takes time - e.g. at least 10 years to educate a scientist to a level where they may competently manage, innovate and begin to lead their field locally. Thus there is a need for long-term programmes that are dedicated to both investing in individuals and strengthening the organisations they work within, including their administration, governance, and support systems including IT. Some of the key needs are:

- ensuring training in research methods, proposal development, research project management and paper writing
- access to excellent training in the UK for high flyers (with competitive entry)
- free online teaching materials and interactive documents to facilitate learning of key analytical methods
• sponsoring research internships/degrees at institutions within the region of appropriate standing
• access to reading materials (text books) and up to date research; free online journal access (e.g. extending HINARI to broaden the number of journals covered)
• support for software license fees for key analytical software and manuals
• support for scientific exchange
• support for equipment maintenance
• for translational science/medicine: encouragement of interaction with the private sector
• support for building clinical capacity / platforms (GCP and quality training, local sustainability and leadership, use of sites once training in place) as exemplified by trial capacity for leishmaniasis and trypanosomiasis built in East Africa and Central Africa, and now being locally driven.

8. Some long term programmes have successfully used a model of simultaneously bolstering teaching capacity by situating experienced researchers in the target country for the medium to long term while at the same time sending students overseas to undertake their doctoral training - post graduate study in a world class environment can be truly empowering and help to create internationally competitive research leaders. It is vital that both these activities are undertaken simultaneously because it establishes a "research culture" in the target country while also turning out fully trained scientists. Retention of graduates in the target country has been achieved by ensuring that large components of their thesis work (if not all) are undertaken in the home country and by providing add-on postdoctoral components to the programme. Both of these initiatives foster the idea (for the student) that there is a future in research in their home country. The existence of a stimulating research institute in which to carry out doctoral and postdoctoral studies is also vital to the encouragement and retention of programme participants and graduates.

9. Good examples of long term partnership programmes include:
• the development of the Kintampo Health Research Centre in Ghana. This was enabled by a long-term large scale collaborative research programme funded by DFID that was sufficiently long to enable the establishment of a credible infrastructure that then attracted more funding. DFID allowed training costs (PhDs, MScs etc) to be included which were used not just for research staff but to build research capacity more generally - thus it enabled 2 of the computer centre staff to come to the UK for computer science masters. In recent years 2 staff also received Commonwealth PhD scholarships with the Centre being allowed to apply for these as part of a DFID consortium.
• a large EDCTP trials network focussed on malaria combination therapy in West Africa. The funding model has generated an excellent project, and the capacity development aspects are very promising - the European partners (3 plus Medicines for Malaria Venture) mainly provide technical assistance with laboratory investigations and training of PhD and Masters students from the African sites; the more advanced African partners (3) are directly providing capacity development activity in Guinea-Conakry, which has a very poor infrastructure in terms of clinical trials capacity. The focus of all decision-making and protocol development has been the lead African partner (University of Bamako, Mali).

10. As indicated above, a key part of strengthening research capacity is post-graduate training of developing country scientists. Provision of residential and distance learning (DL) high quality post graduate training for scientists from developing countries is still of major value and likely to continue to be so for a long time to come. Distance learning has especial value as a means of extending access to education – e.g. LSHTM has around 5 times as many students enrolled on DL than London-based courses, and it has proven enormously
attractive to students who otherwise cannot or do not want to come to London to study. The cost for a DL Masters is approx one third that of a London-based MSc and students can study whilst working and apply learning immediately in their professional context. Mixed mode study - doing some study in London and some by DL - is also of interest although not feasible for all.

11. There has been effort devoted to evaluation of training – eg evaluation of the impact of scholarships (e.g. Commonwealth Scholarships Commission - http://cscuk.dfid.gov.uk/evaluation/), and evaluation of postgraduate education involving tracing and career mapping of alumni (eg http://www.lshtm.ac.uk/alumni/survey/). Such evaluations generally identify the critical value of support to post graduate education in furthering scientific careers.

12. Experience is increasing of supporting post-graduate training in institutions in developing countries through programmes such as the Malaria Capacity Development Consortium http://www.mcdconsortium.org/ which has built on the successful Gates Malaria Partnership which trained many PhD students from Africa, and the Wellcome Trust’s African Institutions Initiative http://www.wellcome.ac.uk/Funding/International/WTX055734.htm and the PHFI-UK consortium http://phfi-uk.org/index.php. This type of support is likely to become an increasingly important component of the UK government's support for research capacity development in developing countries in the future. Careful evaluation of how effective is this kind of capacity development will be needed.

How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?

13. Monitoring of the effectiveness of scientific capacity building programmes is a weakness, as the time scale for impact is much longer than the implementation. For example building a new course, or School of Public Health can take at least 3-5 years. But the results of that course will take many years, or decades, to bear fruit as the students enter research and make their name by doing good science, and excellent research. The quality of the ground work will only be apparent when the graduates become research leaders in their own right.

14. However the UK Government could play a role in developing interim process benchmarks of excellence. This could include markers of sound implementation, realistic and important milestones of success, and measures of sustainability of the programmes. An important aspect is to ensure that barriers of discrimination within the country are broken down, and that access to higher education and professional development is based on merit and not on patronage.

What role does DfID's Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?

15. The CSA clearly has an important role, but care should be taken not to over-generalise policy. Different solutions will be required for different countries / regions, and an awareness of what strategies would best suit the locale should be demonstrated in any project proposals. The multiplicity of funding streams for any given country can greatly hamper capacity strengthening – it can be capacity destroying, so local leadership (and supporting the creation of such leadership) to set priorities is critical.

16. That said, a "best practice" model could be synthesised via a "lessons learnt" evaluation of the capacity building policies to date, and should inform policy (i.e. policy should be evidence based).
17. DFID works reasonably well and effectively with the voluntary sector. MRC is more successful with collaboration with the private sector, for example by supporting trials in developing countries of tools developed by pharma. An area that seems to have been little explored is collaboration with the private sector in developing countries and this should be possible in a number of countries such as India and China which have thriving private companies in the health sector. A recent example of a successful project of this kind has been the development of a new meningitis vaccine for Africa through a collaboration between PATH and the Serum Institute of India, a private company. DFID appears now to be providing some support to the Serum Institute to develop a further meningitis vaccine and this kind of collaboration should be encouraged and may be possible in other areas.

18. Agencies such as VSO can play a valuable role in local capacity development. Relevant skills go beyond those of doctors and nurses; for example biomedical scientists are critical for helping develop high quality laboratory services.

London School of Hygiene and Tropical Medicine

15 December 2011
Written evidence submitted by the Natural History Museum (Int Dev 09)

Background and interests

1. The Natural History Museum (NHM) has a mission to maintain and develop its natural history collections to be used to promote the discovery, understanding, responsible use and enjoyment of the natural world.

2. The NHM's statutory obligation under the British Museum Act 1963 is to care for and give access to the nation's natural history collections. The collections comprise over 70 million specimens, ranging from international collections of biodiversity and minerals to DNA samples from mosquitoes collected and stored using the latest technology. The Museum, through its collections, research and knowledge exchange, is part of the UK's science base and a major intellectual infrastructure that is used by its own 350 scientists and over 8,000 annually from across the UK and the globe to enhance knowledge on the diversity of the natural world and addresses some of the major challenges society faces, from biodiversity loss due to climate change to the spread of parasitic disease and to the sustainable use of natural resources. The NHM is the pre-eminent institution in a wide international network of collaboration and common purpose with respect to the diversity of the natural world and its uses by humans. The NHM also makes significant expertise and information resources available for different needs, together with training, education and public engagement programmes. It cares for and develops these collections for future generations to use in ways not currently possible to help answer future scientific questions of importance.

3. The NHM is a recipient of Darwin Initiative funding from the Department for Environment, Food and Rural Affairs (Defra) for a range of projects that assist countries that are rich in biodiversity but poor in financial resources to meet their objectives the three major biodiversity Conventions: the NHM is particularly active in working with international partners under the Convention on Biological Diversity (CBD).

Submission

Question 1: How does the UK Government support scientific capacity building in developing countries and how should it improve?

4. The Museum as a scientific research institution is active in over 70 countries, collaborating on scientific research, collections development and capacity building, and providing commercial scientific consultancy services. The NHM collection is a major part of a network of collections in both developed and developing countries that is essential for scientific research and its effective application in managing the environment, public health management and sustainable use of biodiversity. The capacity building we undertake is primarily around research in the form of joint research projects, field projects, community partnerships and postgraduate education; and collections and information development and management in the form
of training courses and network development, standards and access development, mobility of collections and information repatriation. This assists scientific development in-country and provides long-term access and collaboration for the Museum – the research, collections and skills of all the partner institutions develop as a result of this activity, resulting in shared benefits.

5. The Museum has also been active in discussion and development of initiatives under the CBD in partnership with developing countries: staff have provided advice and expertise to Defra, the CBD secretariat and other agencies and have undertaken needs assessments for taxonomy in developing countries.

6. The Museum also has a commercial exhibition design consultancy service which supports the development of exhibitions and museums in a number of countries: it has, for example provided expertise for the master-planning of a new natural history museum in Malaysia.

7. The Museum’s principal funding comes from the Department for Culture, Media and Sport. However, our scientific and public engagement activities contribute to a number of other Government Department's agendas, including those of the Department for Education, the Department for Business, Innovation and Skills, the Department for Environment, Food and Rural Affairs, the Foreign and Commonwealth Office and the Department for International Development.

8. The Museum’s scientific research in taxonomy, classification and evolution underpins all the life sciences. Without this understanding, it would not be possible address a number of major challenges, including biodiversity loss due to climate change of the control of parasitic diseases. The Museum’s history, and that of the UK, means that it holds an international collection and expertise of major value to many developing countries. Addressing the most productive and interesting research questions means working internationally and capacity building in research and collections is an essential element of this work to strengthen current and future collaboration and value to the UK. Partnership with governments, universities, NGOs and others in developing countries is now a standard practice.

9. The Museum is currently reviewing the strategic alignment of its research with Government and other priorities. This will include consideration of collaboration and funding generation and application with other UK and foreign organisations, aiming at improving effectiveness of scientific programmes, which include capacity building.

10. The Museum welcomes discussion with Government on an ongoing basis on the Museum’s contribution to the UK response to international imperatives for development of scientific capacity, such as under the CBD or the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES).

Question 2: What are the most effective models and mechanisms for supporting research capacity in developing countries?

11. Research capacity in developing countries differs widely as a result of historical investment and development and access to current resources. For some countries with established university systems that conduct research; with collections institutions
such as natural history museums and botanic gardens; and with a capacity for application of research findings, the Museum has often many years of collaboration, respect and exchange of mutual benefit that actively supports research capacity through partnership. The limiting factor in such cases is often resources both in the UK and in the developing country that constrain the scale, frequency and output of collaboration.

12. For other countries, there may be very limited research capacity, few resources for collections institutions or infrastructure where these exist and limited engagement with policy. In some cases, the Museum may hold definitive collections from the past that would be needed for effective research. In such cases, the Museum can work with local partners to deliver some benefit but active external funding from sources such as the Darwin Initiative is essential to have significant impact. Even if funding for a number of years is available, policy and funding support from within the country are essential for a sustainable research capacity even in narrow areas of science. There is potential for exploring regional networks for the development of research capacity and infrastructure across a number of countries: this has been relatively rare to date, with a focus on certain information products such as digital collections, rather than research capacity as such.

13. Continued support for actors such as the Museum is essential and the current model is the most effective, if limited by resources. However, there is potential for better co-ordination to allow for the better sharing of intelligence and a more accurate measurement of value to Government. Specialist institutions like the Museum have a critical role to play in building scientific capacity, literacy and civil society, which can be perhaps more effective in specific areas than through direct Government involvement. However, recognition is required of this work across Government.

**Question 3:** How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?

14. If the Government wants a complete assessment of this type of work that it funds then it will need to broaden its oversight to include organisations like the Museum. The Museum would welcome discussions on research capacity and infrastructure development.

15. Specific Government funding programmes such as the Darwin Initiative include effective monitoring and assessment.

**Question 4:** What role does DfID’s Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?

16. The Museum is unable to answer this question, however, we would welcome the opportunity to discuss our contribution to this area with the Department and its Chief Scientific Adviser.
Question 5: How are government activities co-ordinated with the private and voluntary sectors?

17. The Museum is not able to answer this, but it does work with organisations in each of these sectors, particularly the latter, in developing research capacity in developing countries.

Natural History Museum

15 December 2011
Written evidence submitted by the
Institute of Physics (Int Dev 10)

1. The Institute of Physics welcomes the opportunity to respond to the important issues raised in this consultation. We consider that effective support to enable developing countries to engage fully in scientific and technological issues is key to achieving many international development goals.

2. We have not sought to try to answer all the questions posed by the consultation, only those where we think learned societies have an important input to make.

Question 1: How does the UK Government support scientific capacity building in developing countries and how should it improve?

3. We have focused in this response on the activities of the Department for International Development (DfID) as the major UK agency for providing support to the developing world. DfID has made some progress in supporting scientific capacity building, but our perception is that this may be overshadowed internally by more obviously immediate issues, for example support for poverty alleviation and a more recent focus on countries where conflict resolution is a priority. It should be emphasised that support for science and technology development is an underpinning – not a competing – priority. It is one of the most important keys to effectively addressing all other development goals, and in particular to tackling the challenges of climate change.

4. We would draw the Committee’s attention to comments recently made by Bill Gates at the G20 summit on the vital importance of supporting innovation for development (http://www.scidev.net/en/science-and-innovation-policy/innovation-policy/news/gates-tells-g20-innovation-is-the-key-to-development.html ). Innovation is of course not possible without support for the development of the underpinning capacity to create and assimilate relevant research and technologies.

5. In this context, we are concerned by the lack of visibility of the importance of scientific capacity building in the summary of the recent DfID report UK Aid: Changing Lives and Delivering Results on the conclusions of their Bilateral and Multilateral Aid Reviews.

Recommendation 1: The Institute of Physics believes that support for scientific capacity building needs to be more overtly stated as a development objective by DfID, if it is to be treated as seriously as it deserves in decisions on the allocation of funds.

Question 2: What are the most effective models and mechanisms for supporting research capacity in developing countries?

6. UK learned societies, including the Institute of Physics, have been actively considering this issue. In 2009, a discussion meeting involving a broad spectrum of UK learned societies concluded that many international programmes in scientific capacity building, including those supported by DfID, tend to focus on building research infrastructure, providing relevant education, and supporting research projects. These activities have significant value in that developing country scientists need access to education, laboratories to work in, and research funding for their
projects. Such programmes have often included some capacity building support for individuals and related research networks, but have not addressed longer term support needs. We believe this approach is flawed in that the value of underpinning long term scientific networks, which support professional careers and drive much of the way in which science is actually done, has been relatively neglected. This threatens the sustainability of the valuable institutional and other investments made.

7. The discussion meeting also noted the view of American academic Caroline Wagner that international agencies have mistakenly tried to take the existing western model of “big science” and transplant it to the developing world – ignoring the fact that it had taken the western world 200 years to evolve such systems. The networking activities of learned societies were highlighted as having been a very important driver of the historical development process. She concluded that supporting smaller, more organic, networks of scientists in developing countries might be more productive to catalyse similar development processes.

8. Learned societies of every discipline are perhaps in a unique position to contribute to addressing this gap. They are quite different from the many other ways in which science is organised, whether through government funding agencies, universities or science based industries. In essence they are clubs of scientists, whose raison d’être is to provide mutual support and to build capacity in their disciplines. They are not by nature hierarchical, and are naturally organised as extended networks of scientists with strong links at grass-roots level. Many of the well-established societies, founded in the UK to serve their immediate scientific communities, have naturally extended to include an international membership, and have been quietly supporting budding scientists in the developing world before the main international aid agencies woke up to the importance of this. Such activities have not been developed by remote policy makers, but have the advantage of having been driven by the expressed needs of their memberships.

9. Learned societies can address capacity building at many levels in an integrated way, from working with scientists at grass-roots level to advising on science policy at governmental level. Learned societies and their members know how to set up and run scientific journals (many of which are still closely connected to the societies that created them), promote the highest research standards through peer review, run events on topical research issues, provide networking and career development support, train students, work with schools and universities to encourage young people to study and take up careers in science, promote the engagement of women in science and engineering, liaise with industry, and engage with the media and the general public on crucial issues of public concern.

10. We believe that there is a valuable potential opportunity to support the growth of indigenous learned societies in developing countries. The Institute already seeks to do this (see attached summary) as do other learned societies in different disciplines. DfID funding to enable UK learned societies to mentor equivalents abroad, helping them to provide much needed local support to their scientific communities and integrate them into international networks, would be especially useful to allow us to expand these activities and would help DfID meet the capacity building objectives stated in their Research Strategy 2008-2013: Strong and more equal north-south partnerships; access to global research networks and expertise; practical help to ensure that research is high quality; and opportunities for personal and career development within wider organisational support.

Recommendation 2: The Institute of Physics proposes that DfID should provide support to enable UK learned societies to partner and mentor their developing
11. Another issue identified at the 2009 discussion meeting was the perception that DFID prefers to fund large scale initiatives and lacks the flexibility to provide support for smaller scale programmes. Although this approach may be attractive in terms of administrative economies of scale and perceived added impact of highly visible major investments, it lacks the ability to test new approaches in a low risk way and rules out promising, small-scale projects like those the Institute sponsors through our IOP for Africa programme, which offer excellent value for money (see attached summary).

12. Learned societies have had the flexibility to be able to support innovative small-scale initiatives, and have therefore been able to respond in a timely way to ideas being generated by scientists in developing countries. However, surveys of capacity building initiatives in learned societies, conducted by the Royal Society and the UK National Commission for UNESCO (UKNC) in 2007 and 2009, indicated that because of lack of funding many such programmes, though successful, remained small. This means that it has not been possible effectively to build on success. The best initiatives start small and are enabled to evolve to meet real local needs. Donors should have funding programmes that can cope with flexibility, diversity and small applications.

**Recommendation 3:** The Institute of Physics proposes that DFID’s funding mechanisms should be sufficiently flexible to enable small scale pilots with successful outcomes to be scaled up where appropriate.

**Question 5:** How are government activities co-ordinated with the private and voluntary sectors?

13. The Institute can only comment on this question from the perspective of learned societies in the third sector. Our experience is that there is no obvious gateway to co-ordinating our efforts in international development with government activities, and indeed the many small initiatives undertaken by individual learned societies would also benefit from a co-ordinated approach.

**Recommendation 4:** The Institute of Physics would encourage DFID to consider how to engage the learned societies in a forum which facilitates their involvement in the international development agenda. In particular DFID’s Chief Scientific Advisor should actively engage with UK learned societies on this issue.

14. The Institute has also noted the creation of an independent watchdog to scrutinise DFID’s activities (http://www.dfid.gov.uk/News/Latest-news/2011/UK-aid-watchdog-publishes-first-reports/). We emphasise the importance of representation of the scientific community on this body (the Independent Commission for Aid Impact), to facilitate co-ordination and provide guidance on capacity building issues.

**Recommendation 5:** The Institute of Physics recommends that the science and engineering community should be represented among the membership of the Independent Commission for Aid Impact.
References


Attachment: Physics for a better world – a summary of Institute of Physics international programmes¹

Institute of Physics

15 December 2011

¹ http://www.iop.org/about/international/file_43479.pdf
Written evidence submitted by
The Association of Commonwealth Universities (Int Dev 11)

The ACU and declaration of interests

1. The ACU is a membership association of 533 higher education institutions (HEIs) across the Commonwealth. Two thirds of our members are in Asia and Africa. Since the late 1960s our membership profile has been strongly southern; we have been engaged with supporting developing country science over several decades and are familiar with the wider shifts in policy. Much of our work in the past decade has focused on supporting our members in Sub-Saharan Africa, and we therefore draw particularly on this experience in this submission.

2. The ACU provides the secretariat for the DFID-funded Commonwealth Scholarship Commission, and has worked with DFID in the past on a number of projects. It is currently the lead partner in the DFID funded Development Research Uptake in Sub-Saharan Africa (DRUSSA) programme.

Introduction

3. One of the greatest problems facing developing country scientific and technological research capacity, and one of the barriers to the rebuilding of such capacity, has been the de-institutionalisation of research. Inadequate funding and support for research at national level, the need for academics to supplement poor salaries, and the reliance on donor and other external funding has meant that in many cases researchers have become consultants for hire.¹ Research has become more individualistic and often undertaken as a fee-earning enterprise, rather than reflecting the collaborative work of HE research departments. In many cases it has been of the problem-solving, consultancy variety, with frequently changing and short-term assignments, leaving many researchers with no discernible specialism or focus and with core disciplines weakened as a result.

4. Development agencies have and continue to contribute to this problem. Frustrated by the declining ability of HEIs to undertake and manage good research, many funders have opted to approach individuals instead of institutions. The brightest minds have thus become development analysts, producing applied and policy-driven work to answer donor questions instead of independent and rigorous basic research. While policy-relevant and applied research is vital, it must undoubtedly be built on strong foundations of basic science.

¹ Wight, D. (2008) ‘Most of our social scientists are not institution based... they are there for hire’ Social Science & Medicine, 66, pp.110-6.
5. The decline of higher education institutions in many developing countries during the 1980s and 1990s has been well documented and widely discussed over the last ten years. The development of mass higher education systems internationally has been reflected in a huge growth in undergraduate enrolments in developing countries. In most cases this has not been met by proportional increases in public spending; already overstretched facilities must now serve many more students. In Tanzania as a whole, the student-staff ratio grew by 60% between 2003 and 2007 to 24:1. At the University of Ghana it grew by 93% between 2000 and 2008 to 29:1.

6. The success of developing country science, and the strength and sustainability of the research base, will depend on the strength of the tertiary system. Developing countries have already made firm commitments to expand their tertiary sectors; the success of science will therefore depend on whether or not these universities succeed. Many tertiary systems are fragile and in need of external support. The world cannot afford to let systems in developing countries collapse again as in the 1980s and 1990s.

7. Scientific capacity and research capacity are two related but different things. We understand research capacity to be about the capacity of HE and research institutions to carry out basic research, whereas scientific capacity is broader and includes the production of scientifically trained graduates for other industries and sectors. Higher education institutions are central to both, but we concern ourselves here with the former – the capacity of the research system in universities and other national research institutes. In understanding capacity, DFID highlights three distinct but interrelated levels to be addressed – individual, organisational and institutional. As is common in the tertiary sector, the word ‘institution’ is used here to refer to higher education institutions, rather than in the sense of overarching national/regional frameworks implied by DFID’s definition.

8. There is an urgent need for doctoral training in many tertiary systems. In 2007/8 only 28% of academic staff in Ghana, 15% in Mozambique and 12% in Uganda held doctorates. This masks huge variation at institutional level, and between public and private institutions.

9. The proportion of postgraduate enrolments is low and falling in some cases. Over 2000-2008 the University of Ghana witnessed a drop in the number of postgraduates as a proportion all students from 14% to 7%. While master’s student numbers have grown in many universities, doctoral enrolments have been low and growth has been particularly low year on year. Between 2001 and 2007 doctoral growth at Makerere University was 2.3%; at the University of Nairobi it was minus 17%. Quality of training is critical, to ensure that PhDs are completed, and that those graduating can become independent researchers. In 2007, the University of Botswana produced just four PhDs, the universities of Dar es Salaam and Ghana 20, and Makerere 23. Nairobi by contrast had 32 doctoral graduates.

Q1: How does the UK Government support scientific capacity building in developing countries and how should it improve?

10. UK Government provides important support at a number of levels. DFID contributes significantly through research funding, scholarships for study in the UK, and through the provision of funding other training and capacity building support, either embedded within research programmes or as free-standing initiatives. Notable examples include: the multi-year Research Programme Consortia; support for master’s and PhD study through the Commonwealth Scholarship

5 This was partly as a result of the policies of the multilateral and bilateral donors who concentrated support on basic education at the expense of the tertiary sector, and encouraged national governments to do the same. See footnote 2 for references.
Commission; the Development Partnerships in Higher Education (DePHE) scheme which enables partnerships between HEIs in north and south; and contributions to the work of organisations such as INASP\(^9\) and to programmes such as Development Research Uptake in Sub-Saharan Africa (DRUSSA). Further support is provided by BIS, via grant in aid to the national academies\(^10\) and through the research councils, to enable UK scientists to collaborate with developing country counterparts. In such contexts, capacity building is not the primary objective. The UK Government also provides important capacity support through contributions to multilateral initiatives, including the European Development Framework, which supports EDULINK, the ERASMUS programmes, as well as the mobility instruments funded by the EC’s framework programme.

11. **The development of genuine and sustainable research capacity is a complex process**, and understanding of how to do it well is evolving. Too often, capacity development is seen to be a natural consequence of research funding; support to capacity at one level (eg individual) is often assumed to contribute to the development of capacity at other levels (eg at HEI level). This is not always the case. A handful of workshops as part of a research project do not constitute capacity building; and training an individual will not necessarily increase an institution’s research capacity unless that individual has the necessary support and resources.

12. **Producing high quality research at the same time as building capacity is sometimes seen as incompatible.** In some instances it may be possible to achieve both at once; in others there is a risk that longer-term capacity building is overlooked in the immediate pursuit of high quality research outputs. Much depends on the approach adopted and the specific needs of the HEI or the discipline in question. Embedding research in a capacity building initiative, such that a programme designed to build capacity provides opportunities for research to be undertaken, but where the success of the initiative is not judged primarily by the quality of the work produced may be more appropriate in some situations.\(^11\)

13. **Effective capacity building efforts must acknowledge the interactions between different levels and forms of support.** Individuals are part of research institutions and institutions operate in wider policy environments and as part of a national research system. DFID should be commended for its emphasis on research capacity and efforts to improve the way in which it does this. DFID’s **existing support to research capacity, and to universities, is currently split across a number of departments and domains** (Research & Evidence, UN & Commonwealth, education advisors, and advisors in specialist sectors such as agriculture). DFID should consider developing a specific policy to guide its support to universities, to ensure that its various channels of support are well connected, and to ensure that its current and future support to the sector is more than the sum of its parts. Greater coordination between DFID’s scholarship mechanism and the Research and Evidence Division would be particularly valuable.

14. **DFID could also coordinate its work more effectively with other bodies**, some of them funded in part by UK Government. The Research Capacity Strengthening Group of the UK Collaborative on Development Sciences (UKCDS) has provided an important forum for discussion and information sharing, but could be used as the basis for greater collaboration in programme design and implementation.

15. Of particular importance is that **DFID coordinate its work effectively with other donors.** The UK Government has already committed to do so in its wider aid programme through its signature to the Paris Declaration and Accra Agenda for Action. Many HEIs are in receipt of support and funding from a number of donors at once. At the level of the individual institution this can at best be confusing, but at worst wasteful, of time and resources, as well as favouring those institutions which are already well-established and receptive to donor support. HEIs can be over-burdened by multiple and different reporting requirements. A workshop of international funders convened in 2010 explored how donors could work more effectively together to improve universities’ access to their support, whilst also meeting their own reporting requirements.\(^12\) There have been related

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\(^9\) The International Network for the Availability of Scientific Publications (INASP) www.inasp.info

\(^10\) The British Academy, Royal Society, and Royal Academy of Engineering

\(^11\) This thinking informed the development of aspects of the DFID-supported Partnership for African Social and Governance Research (PASGR) which included a research grant stream where recipients would be actively mentored and supported, and benefit from a number of workshops, and where the expectation was not necessarily that the highest quality work would result, but that individuals would develop a much stronger grounding methodologies as a result.

\(^12\) Funders and African Universities: Enhancing the Relationship: www.acu.ac.uk/member_services/professional_networks/research_management/funders___african_unis_seminar_repo rt_2010
discussions under forums such as ESSENCE (in health)\textsuperscript{13} and under the Europe-Africa ‘Access to Success’ initiative.\textsuperscript{14}

Q2: What are the most effective models and mechanisms for supporting research capacity in developing countries?

16. There is a lot that can be done, but there can be no quick fixes. \textbf{A consistent and long-term policy view is required}. Two to three year projects are an insufficient basis on which to deliver meaningful capacity support; 10-20 year time horizons are required. \textbf{There are a variety of models for research capacity development, and approaches depend heavily on the discipline in question and institutional contexts} – some fields may lend themselves to particular approaches, or some institutions may be stronger or weaker in particular areas.\textsuperscript{15} Ensuring a range of approaches is likely to be important, and rather than highlight specific models we seek to highlight some of the key underlying issues.

17. \textbf{Strong research departments require highly skilled people, the facilities and resources to enable them to undertake high quality work, and strong leadership}, at senior level, and at the faculty and departmental level. HEIs and research institutes must be able to develop a critical mass of researchers in particular disciplines.

18. Facilities and resources are of course critical (the laboratories, libraries, IT and communications infrastructure, and shared national or regional research infrastructures),\textsuperscript{16} as are decent salaries: staff must be properly remunerated if they are to be retained, and if they are to concentrate on long-term science rather than on short-term consultancy. \textbf{Where it is not feasible to develop sufficient facilities in all institutions, or at least in the immediate future, shared models may be valuable}, like the Biosciences eastern and central Africa (BecA) Hub.\textsuperscript{17}

19. \textbf{Scholarships, supported by DFID through the Commonwealth Scholarship Commission (CSC), have been hugely important}, particularly in providing a route for PhD study.\textsuperscript{18} There continues to be substantial demand. While alternative modes of delivery (including split site programmes)\textsuperscript{19} and the introduction of new doctoral programmes in developing countries provide new routes, traditional scholarships will continue to be a critical and valued part of the package of support. Scholarship programmes are also typically long-term commitments; the CSC’s alumni and evaluation work has a record achievement over a period of 50 years.

20. \textbf{There is considerable scope to foster postgraduate training initiatives which make use of new models of delivery}. These might include virtual graduate schools, several institutions working together to form collaborative doctoral programmes, such as the Consortium for Advanced Research Training in Africa (CARTA).\textsuperscript{20} At master’s level the Partnership for African Social and Governance Research is developing a collaborative social sciences training programme.\textsuperscript{21}

21. \textbf{Strong cores of researchers in a given field, and in a given institution or network of institutions is needed}. We must therefore guard against spreading resources too thinly, whilst also recognising that a diverse HE sector is important, and is increasingly the goal of many countries seeking to promote greater access.

22. \textbf{If the potential of doctoral training is to be realised beyond advancing a single career, individuals must have strong institutions to return to}. Well-trained individuals can do little to

\textsuperscript{13}http://apps.who.int/tdr/svc/partnerships/initiatives/essence
\textsuperscript{14}www.accesstosuccess-africa.eu/web/events/workshops/capacity-building.html
\textsuperscript{15}These might include but are not limited to: scholarships and fellowships; competitive research and training grants, including for collaborative work; hub models to connect networks of institutions and researchers around specific disciplines; direct support to individual higher education institutions; support to higher level networks or associations who set wider agendas and distribute grants; funding to multilateral programmes to support larger scale initiatives. The UK Collaborative on Development Studies hosted a recent workshop to discuss the potential of different models and to share experiences between UK and other international donors.
\textsuperscript{16}For example, dedicated national and regional broadband networks for academic use, or larger scale facilities in fields such as radio astronomy
\textsuperscript{17}http://hub.africabiosciences.org/
\textsuperscript{18}See CSC evaluation studies available at http://cscuk.dfid.gov.uk/category/publications/evaluation-publications/
\textsuperscript{19}http://cscuk.dfid.gov.uk/apply/split-site-scholarships/
\textsuperscript{20}www.cartafrica.org
\textsuperscript{21}www.pasgr.org
advance science and research if they have nowhere to work. An often overlooked aspect of research capacity is the **ethos and culture of research within an institution**. Better facilities and good leadership can go a long way towards fostering this ethos, but cultures of research take time to build and require strong and supportive inter-generational relationships so that junior scholars benefit from the experience of more senior colleagues.

23. **Greater attention must be paid to the early research career.** The immediately post-doctoral years are critical for an emerging researcher. However, the over-individualisation of research has led some senior staff to see junior colleagues as a threat to be checked rather than as potential to be nurtured and encouraged.

24. **This would include developing better career structures for those graduating from PhD programmes,** ensuring good mentorship by senior researchers, providing seed funding to initiate new research projects, support to publish, and assistance to establish links with the appropriate networks in their field. A post doc period is also normally needed for a researcher to acquire the necessary skills to run a research group of critical mass. The ACU and the British Academy have recently prepared a more detailed study on this subject, to be published this month, and would be willing to provide an advance copy to the committee. 22

25. A potentially valuable approach would be to develop a mechanism for **3-5 year early career fellowships,** where researchers remain based in their home institutions, but are able to spend six weeks each year in a host institution, within Africa or overseas. This would be a relatively new model, and would utilise the possibilities for remote as well as physical networking. While there is understandable concern over brain drain, in a world where research is increasingly international and collaborative, the question of whether people ‘return home’ is now far too simplistic. Such an approach would be of mutual benefit to science in both the country concerned and in the UK.

26. **HEIs need to be able to manage their resources for research and capacity support centrally, and to determine their own priorities.** DFID has responded positively here, untying its aid and promoting southern management of research capacity programmes. It should continue to lead the way. HEIs need to be assisted to understand funding frameworks better, including the calculation of overheads and budgeting for staff time more effectively. The ACU has developed a substantial research management programme in recent years to address this need. 23

Q3: How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?

27. **There is a need to develop systems of impact assessment and evaluation which take a long term perspective.** It may take many years for the impact of a particular intervention to be realised. PhD training may take three years, but it may be many more before an individual’s impact on the research strength of their institution can be meaningfully assessed. Long term goals are all too often assessed through the completion of short term projects. This tends to encourage defensiveness on the behalf of project implementers or funders (who wish to secure future support), and often only the positive stories are told. The candid evaluation offered by the US-based Partnership for Higher Education in Africa was valuable for its willingness to be self-critical. 24

28. Research capacity is much more than can be measured by outputs and evaluating through output based metrics alone is therefore misleading. Research capacity depends on networks of individuals collaborating over time, and on cultures of scholarly inquiry.

29. **For higher education institutions in receipt of funding, DFID’s approach to evaluation may be too complex.** Mechanisms are needed which enable universities to capture the benefit of external support to their own internal capacity, and the lessons and benefits of prior schemes need to be collected, analysed and discussed in greater detail. Too much learning has been lost over the years as interests have changed and schemes have come and gone. The England-Africa

23 [www.acu.ac.uk/member_services/professional_networks/research_management/research_management_Programme](http://www.acu.ac.uk/member_services/professional_networks/research_management/research_management_Programme)
Partnerships and Education Partnerships in Africa schemes\textsuperscript{25} are a case in point: there are many important stories to tell from these schemes, but there has been relatively little attempt to extract any learning from them. Longer-term retrospective evaluations can provide valuable opportunities for learning in the way that trying to match a project’s goals to its outcomes cannot.

30. Developing country science would benefit from the ability to develop strategies and plan more effectively, and capacity in agenda setting and the undertaking of foresight studies would be potentially valuable here.

31. **Pressures to keep DFID's administrative costs as low as possible are in danger of negatively impacting the effectiveness of its capacity building support.** To design, deliver and monitor effective capacity support (even where external organisations are involved as implementing agencies), to understand and evaluate this appropriately, and to ensure continued learning as an organisation, requires sufficient numbers of experienced staff in-house.

Q4: What role does DFID Chief Scientific Adviser plays in determining priorities and in the development and assessment of capacity building priorities?

32. **The CSA should be a strong and independent position, in order to effectively and impartially advise** on the range of science related work across DFID. The current arrangement where the CSA doubles as head of Research and Evidence Division is thus problematic.

33. DFID’s efforts to recruit specialist research fellows in key areas is worth acknowledging, since it offers an opportunity to ensure that a range of perspectives and disciplinary expertise is brought to bear, not least in contexts where interdisciplinary approaches are essential to gaining better understandings of key development questions.

Q5: How are government activities co-ordinated with the private and voluntary sector?

34. The private and voluntary sectors are important partners for government in research capacity building, and include HEIs, associations and networks of HEIs, NGOs, charitable funding bodies, learned societies and professional associations, as well as private sector consultancies. A visible UK Government strategy or framework for scientific and research capacity to which all parties could adhere, on a voluntary basis, or a widened UK research capacity providers’ network, building on the valuable foundations laid by UKCDS, might help to address the issue of sector coherence.

The Association of Commonwealth Universities

15 December 2011

\textsuperscript{25} Funded by what is now BIS
Written evidence submitted by the
Commonwealth Scholarship Commission (Int Dev 12)

Background and Declaration of Interests

The **Commonwealth Scholarship Commission** in the United Kingdom is a Non-Departmental Public Body, established by Act of Parliament in 1959. The Commission manages the United Kingdom contribution to the international **Commonwealth Scholarship and Fellowship Plan**, through which individual Commonwealth countries offer training and educational opportunities to citizens of other member states. As noted below, DFID is the dominant funder of the Commission, which also receives support from the Department of Business, Innovation and Skills, the Scottish Government and individual UK universities. The Commission also has strong relationships with the Association of Commonwealth Universities, which provides its Secretariat, and the British Council, which also provides defined administrative services.

The work of the Commission received favourable comment in the 2004 Report of the Select Committee. Paragraphs 112-116, in particular, commented favourably on the introduction of ‘innovative approaches’ such as the introduction of split-site and distance learning scholarships, and on the continuing policy of the Commission to support doctorates, despite the fact that these were significantly more expensive than taught Masters courses. The Committee also commended the Commission for following a ‘demand led’ approach, noting that this had led to a higher proportion of awards in science and technology than other scholarship schemes, and for the strong representation of science and technology in the review process for applications.

In their response, the Government welcomed the ‘encouraging comments’, and undertook to ensure that ‘the Plan remains at the cutting edge of providing opportunities for study in science and technology.’ This note reviews the extent to which DFID, as the lead department responsible for the Commission, has maintained this commitment, and emerging evidence about the impact of the scheme on development. It also makes observations on the first three Questions in the Committee’s Terms of Reference.

Nature of our Provision

Governments of both parties have affirmed their support for the Commission since 2004, a confidence re-affirmed by a favourable external review in 2007, and a further positive DFID review in 2010. DFID funding for the period 2011-15 has recently been confirmed at £87 million, a significant increase on the three year funding allocation of £51 million for the period from 2008-11. UK universities have also demonstrated their support for the programme, and now routinely contribute to the programme by contributing at least 20% of the cost of tuition fees, and in many cases more. The Department of Business Innovation and Skills contributes £400,000 per year, to ensure that awards are still available for high quality candidates from developed Commonwealth countries, and the Scottish Government currently contributes £50,000 per year.
The Commission currently provides seven different types of award, each tailored to a specific need: PhDs (full-time and split site); Master’s awards (standard, shared with universities, and distance based), academic fellowships and professional fellowships, both aimed at staff in mid-career.

**Representation of Science in the Programme**

Science has continued to be well represented in the programme, reflecting our view of its importance to development. Of 2860 new awards made in the four years from 2007-10, 36% are classified as being in science and technology. A further 9% took up awards classified as Agriculture, Forestry, Veterinary Science and Environment, and a further 15% in Medicine, Dentistry and Public Health, although the latter category also includes some social science awards.

The Commission has no fixed quota for scientists, continuing to place the emphasis on the quality and relevance of individual applications. These are judged by three criteria – academic merit, likely contribution to international development and the quality of the application itself, with marks being awarded in a ratio of 5:5:2. It believes, however, that continued presence of doctorates in its programme represents a key reason for the high proportion of science amongst award holders. The Commission’s continued desire to support high quality doctoral research is continued in its Strategic Plan for 2011-15, which anticipates that doctorates will continue to account for 36-39% of expenditure over the period.

**Development of New Approaches**

The innovative approaches commented on by the Committee in 2004 have also continued to expand. 27% of awards over the 2007-10 period were through distance learning – with recipients studying for UK qualifications but spending either no or very short periods in the United Kingdom. Short professional awards, allowing individuals in key development occupations to spend up to three months with host organisations in the UK, have also increased – representing 10% of awards during the same period. Split-site awards, the other new initiative commended in the 2004 Report, have developed more cautiously. There have been 97 of awards over the period, representing 4% of the total. Our caution in this area reflects the need for a stronger recruitment route for strong candidates, with the facilities in their home country to complete that work not undertaken in the United Kingdom.

The one type of award over which the Committee expressed some reservations in its previous report – Institutional Capacity Grants – has been discontinued. The aim of these awards – which were in a pilot phase at the time of the last Select Committee report – was to concentrate scholarships and fellowships on particular departments or institutions. In practice, tensions emerged between the desire to achieve this and our overriding aim of supporting the best individual candidates according to our selection criteria set out above. It was considered that this emphasis on the qualities of individual candidates represented the best prospect of impact in the long-term.

**Evidence of Impact**

Since 2007, the Commission has embarked on a substantial programme of alumni tracing and evaluation. It is now in contact with over 7,000 former award holders.
An alumni survey, which generated a response rate of almost 40%, found that between 88 and 92% of alumni reported working in their own, or another developing country. In the same survey, of the 90% reporting impact in one or more key priority areas for development, 63% did so in Scientific and Research Applications.

Not surprisingly, given the emphasis on doctorates, and the fact that developing country universities are a leading nominating route, higher education was the largest single destination for alumni respondents to this survey, with just over half working in this area. 93% accessed equipment and expertise not available in their home country and 93% reported that their award had to some extent increased their ability to have influence and make changes at work. The surveys also revealed many individual examples of impact, some of which can be seen from the Appendix below.

It is likely the impact of the programme extends beyond development to wider public diplomacy; since 71% with reported continuing links with their host universities, 55% work contacts and 51% contact with a professional association in the UK. 25% reported holding some form of elected office. The increasing willingness of universities to actively contribute to our awards also demonstrates the very high quality of candidate which Commonwealth Scholarships attract, which in turn contributes to Britain’s international standing.

These findings, and the level of contact with alumni that underpins them, are already significantly further advanced than for most international scholarship schemes, but we recognise the need for much deeper analysis to determine detailed impact. Our Strategic Plan for the next four years includes increased provision for this area, both through expanded and more systematic alumni studies, and more in-depth work to drill down into specific sectors.

Observations to the Committee
In view of our role as a Non-Departmental Public Body, much of the above information is factual in nature. We would, however, like to make the following observations on the key questions posed in the Terms of Reference for the Committee:

Question 1 – How does the UK support capacity building, and how could this improve?
The activities described above are intended to major a major contribution to the overall UK effort in this area. We consider it important that the UK adopts both a balanced approach, and recognises the need for a long-term perspective. Hence our programmes are open both to students and those involved in a range of occupations, across a range of professions.

It is important, too, that such capacity building is judged on the likely catalytic impact, rather than the impact on the recipient only. Whilst this observation applies to all of our awards, it is perhaps most relevant to those at doctoral level. Although the cost of such awards is substantial, we believe, that the ‘payback’ from such candidates, in terms of the numbers that they will teach, or that their research will influence, can justify such levels of investment. This is particularly the case in the areas of science and technology.
Whilst our evaluation results confirm that the proportion of students completing their awards and returning to their home countries are consistently high, we recognise that more consideration needs to be given to supporting such individuals in the period immediately after their return, to ensure that their skills is utilised to best effect.

In this context, we note recent evidence from the British Academy and other studies that point to the lack of early career development structures within African universities. This finding is supported by anecdotal evidence from our own alumni. As higher proportions of highly qualified staff return, or indeed study for qualifications within Africa, we believe it important to support their work at an early stage of their career. In the long term, a parallel programme to the CSC which supports the long term development of African universities as institutions would be one way of achieving this. In the shorter-term, much could be achieved by identifying ways in which returning academics could retain links with the UK institutions. Such investment would not be expensive, benefit both the UK science base and help ensure retention of academic staff within the developing country concerned.

The introduction of such support might be considered outside the current scope of the Commission, which is confined to the provision of scholarships and fellowships. It would, however, play an important role in maximising the impact of our investment. We would be happy to discuss extending the role of the Commission into this area, or alternatively working alongside any further scheme that might be established.

**Question 2 - What are the most effective models to support research capacity in developing countries?**

Effective research capacity requires investment at both individual and institutional level, and a coordinated approach between initiatives. Some progress has been made in both of these areas in recent years, but we believe that more could be done.

The work of the Commission has primarily been focussed at the individual level. We are proud of the fact that, during a decade in which universities were largely disregarded as a recipient of development aid (both in the UK and internationally), the Commission continued to recognise the needs of the sector. The benefits of this investment can be seen by the large numbers of academics and researchers in the critical ‘middle age’ period where African universities, in particular, report significant shortages. Whilst our awards support capacity across a wide range of areas, academic and research careers still provide the largest single destination for our award holders.

Now that the benefits of higher education and research are more widely recognised, it is important that UK government initiatives in the field adopt a coordinated approach. As the major HMG provider of scholarships whose prime aim is focussed on international development, the Commission can provide a valuable resource to other areas of DFID and the development sector. We have already made a start on this. DFID funded research consortia, and programmes funded under the DFID
Development Partnerships in Higher Education programme, are invited to nominate candidates (in open competition with other sources) for our awards. In a recent development, our alumni programme has just provided four in-country consultants to assist in the evaluation of the DFID funded Development Partnerships in Higher Education (DELPHE) programme. We believe that much further potential exists to explore synergies between scholarships and other areas of DFID capacity building, particularly in the area of research.

**Question 3 – How does Government evaluate the effectiveness of science capacity building?**

Our own experience in developing an evaluation programme for the CSC over the past five years suggests that evaluation of scholarship provision is an area in which the UK could be at the cutting edge of international practice. We regard our evaluation reports of recent years as a starting point in regard. Relatively few international donors have developed such robust alumni surveys. We do, however, need to know much more about the detailed impact that our awards have. The Commission is keen to lead international developments in this area, and has convened an international seminar to share good practice in March 2012.

One preliminary comment we would make, however, is the need for such evaluation to take a longer-term perspective. In evaluating scholarships, the ‘pay back’ time of an investment can be spread over thirty years or more. Often the nature of provision will have changed in the interim. For example, the evaluation of our programmes reflects the selection methods and criteria of the time in which the awards were made. Such issues are not easily addressed within the current reporting mechanisms of DFID, which sometimes tend to focus on arbitrary project and funding periods, although the two independent reviews of the Commission’s work that have taken place in recent years have sought to recognise them.

**Conclusion**

The Commission was grateful for the recognition given by the Committee to its work in the 2004, and believes that this is increasingly recognised within DFID. We are particularly grateful for the enhanced support of our work by both the current and previous governments, whilst recognising that support for international scholarships generally in the UK continues to lag behind those of other developed countries.

We believe scholarships will continue to play an important role in scientific capacity building, and this is evidenced both by the proportion of awards made in science related fields, and the evidence of impact through our alumni studies to date. We recognise, however, that more could be done to coordinate such activities within DFID, and that there is a need internationally to develop evaluation tools that better reflect the long term nature of our investments.

By way of further illustration of our work, we attach some specific examples of Commonwealth Scholars for information.
Appendix One: Commonwealth Scholarships and scientific capacity building in developing countries – case studies

Dr Judith Henry-Mowatt (1998 Commonwealth Scholar from Jamaica, PhD in Toxicology at the University of Manchester) spent her award researching in the field of genotoxicity, and she believes that her award has had a wide impact, not just on her career but in her professional field. Judith’s appointment as Director of the Forensic Science Laboratory at the Ministry of National Security in 2007 has enabled her to modernise the institution. ‘As a civil servant, I would not have been able to afford my PhD. The Commonwealth Scholarship award made this dream a reality and has given me the training to make a tangible difference to my place of work and to Jamaica as a whole.’

Judith has participated in drafting the terms and conditions for the operation of Jamaica’s first sexual offenders’ register, and has written the proposal documents for the establishment of a national DNA database. She has also been instrumental in the reorganisation and restructuring of the island’s Rape Units. Internationally, Judith is Jamaica’s forensic representative to Interpol and on the forensic subcommittee of the CARICOM Implementation Agency for Crime and Security, and is one of the country’s representatives on the Caribbean DNA working group.

Judith is also actively involved in training scientists of the future. She has contributed to the development of a Master’s course in Occupational and Environmental Health and Safety at the University of the West Indies, Mona, and has assisted in the establishing of a BSc programme in Forensics at the University of Technology. She is a part-time lecturer in Toxicology at the University of the West Indies, Mona, and has also taught at the University of Technology.

Professor Omkar Wakhlu was part of our first-ever cohort of Commonwealth Scholars, holding a Commonwealth Scholarship from 1960-1963. He obtained his DPhil in Fluid Mechanics from the University of Birmingham. Professor Wakhlu’s work is in the field of promoting quality in engineering education and the development of research facilities in water resource engineering. He is currently working in the areas of water resources engineering, sustainable development, and leadership and quality in education. During his academic career, he has had the opportunity to influence and teach many at the beginning of their careers. As he himself estimates, ‘Approximately 2,000 engineers have graduated after training during my active academic term of 12 years. Many of them work as chief engineers in India and other countries’. He has also conducted several management development programmes in both private and public sector organisations, and is actively engaged as a postgraduate research examiner.
Professor Md Jahiruddin was awarded a Commonwealth Scholarship in 1983, and obtained his PhD in Soil Science from the University of Aberdeen. He returned to Aberdeen as a Commonwealth Academic Fellow in 1996. Currently Professor of Soil Science at Bangladesh Agricultural University, he passes on his knowledge through teaching both undergraduate and postgraduate students, supervising Master’s and doctoral students, and carrying out contract research projects.

‘I have been able to contribute to agricultural research and development in Bangladesh. My research interest lies in two important aspects: micronutrient deficiency in soils and crops, and heavy metal pollution. I have already achieved some significant results which have both national and international value.’

Professor Jahiruddin has successfully determined zinc and boron rates for different crops and cropping patterns in Bangladesh, which have appeared in the National Fertilizer Recommendation Guide, for use by farmers. Recently, he has taken much interest in arsenic contamination, which is a severe problem in Bangladesh, and has investigated arsenic levels in groundwater and soils, and its absorption and accumulation in crops. He has presented his research results in international forums and seminars, and published them in internationally-respected journals. He has also established a modern soil chemistry laboratory at his home institution. In addition to teaching and research, he is involved in other professional and voluntary activities.

Dr Md Monzur Hossain held a Commonwealth Academic Fellowship in Applied Molecular Biology at the University of Nottingham in 2001. Now Professor of the Department of Botany at Rajshahi University, Bangladesh, he, along with his team members, has developed a module for the establishment of a cost-effective commercial tissue culture laboratory, using indigenously-manufactured equipment and apparatus, for the production of disease-indexed high-quality seed potato tubers and other crops. This and other activities have contributed to the establishment of more than 30 tissue culture-based seed potato farms in the private, public and NGO sectors, reducing the need for imports.

This technology has also been successfully transferred to grassroots level, with many farmers becoming involved in producing high-quality seed potato tubers using tissue culture-derived planting materials, and then selling their produce to other farmers. His team has also developed three new strawberry varieties that are suitable for commercial cultivation in Bangladesh.
'These varieties are being used for commercial cultivation for the first time in Bangladesh. This achievement has been highly appreciated by farmers and intellectuals, and has received wide publicity in both print and electronic media.'

Dr Jackson Mwakali is Professor of Structural Engineering at Makerere University, Uganda – the first professor in engineering to be produced by the university in its almost 90-year history. He was awarded two Commonwealth Scholarships in the mid-1980s, obtaining an MSc and a PhD in Structural Engineering from the University of Surrey. Alongside teaching at undergraduate, postgraduate and doctoral levels, he also undertakes research and, outside of the university, is Chairman of the Engineers Registration Board, Uganda National Bureau of Standards Technical Committee on Civil Engineering, and the Bujagali Hydropower Project Monitoring Committee. He is also a member of the National Environment Management Authority’s Technical Committee on Environmental Impact Assessment and the Uganda Investment Authority’s National Industrial Parks Planning Committee.

'I have been consulted widely on the improvement of the construction industry in Uganda, on matters such as how to reduce workplace accidents, and how to best plan physical infrastructure. I have also been involved in numerous technical investigations involving building accidents and dispute resolutions. As a member of several technical committees, I make inputs that influence policies related to environmental management, engineering education, public safety, and so. As a professional engineer, I am involved in consultancies that help solve engineering problems for the benefit of Ugandan and wider society.'

Dr Mwakali has also contributed to long-term impact in this sector through his academic career. Formerly Head of the Department of Civil Engineering at Makerere University, he presided over its growth from around 200 to more than 400 undergraduate and postgraduate students in under ten years, as well as the addition of a new Department of Construction Economics and Management.

Professor Steven Chown was awarded a Commonwealth Academic Fellowship in 1996, spending a year at the University of Sheffield working with Professor Kevin Gaston on Macrocology and Ecophysiology. Since returning to South Africa, he has developed and now directs one of the country’s seven centres of excellence, the DST-NRF Centre of Excellence for Invasion Biology. The main aims of the centre are to reduce the rates and impacts of biological invasions by furthering scientific understanding and predictive capability, and by developing research capacity. It not only employs many staff, but also places graduates both in South Africa and abroad.
As well as undertaking research and supervising postgraduate students within the centre, alongside his other duties, Professor Chown has influenced national environmental policy through his involvement in the development of the research and training policy for the South African National Antarctic Programme, as well as helping draft the regulations for Chapter 5 (Invasive and Alien Species) of the Biodiversity Act.

Professor Anoja Wickramasinghe studied for a PhD in Forest Ecology at the University of Sheffield in the early 1980s, on a Commonwealth Academic Staff Scholarship. Now Emeritus Professor at the University of Peradeniya, Sri Lanka, the university which nominated her for her Commonwealth Scholarship back in 1980, she is currently engaged in a range of work related to forest ecology, including ethnforestry, renewable energy development, gender mainstreaming, and rural and community development. Her work is wide-ranging, and involves teaching, administration, research, supervision, training, dissemination of knowledge, action projects and programmes, consultancy and advocacy, grassroots mobilisation, capacity building, and empowerment. She has contributed towards building local capacity and social capital in more than five administrative districts, through the establishment of women’s organisations, revolving funds, and income generating activities. Significant changes in rural areas have also been achieved through the livelihood development of communities adjoining villages, alongside policy sensitisation work, and the integration of energy into rural development.

Dr Aweeda Newaj-Fyzul is a 2005 Split-site Scholar from Trinidad and Tobago, and spent 12 months at Heriot-Watt University as part of her University of the West Indies (UWI) PhD in Fish Disease and Pathology. She is now based at UWI’s St Augustine campus, where she lectures in fish health and microbiology. Dr Newaj-Fyzul also supervises postgraduate and undergraduate students in fish-related projects, as well as conducting her own research and acting as a consultant and training provider for Trinidad and Tobago’s Ministry of Science, Technology and Tertiary Education.

Two of Dr Newaj-Fyzul’s main achievements include the design and construction of an aquaculture unit at UWI, and the development of an aquaculture course for the government of Trinidad and Tobago.

‘Aquaculture is now being introduced at the School of Veterinary Medicine, where there were no ‘fish labs’ or aquaria previously. I have designed and built an aquaculture unit through funding received from the university. This project has led to four students undertaking Master’s degree programmes in fish-related topics, where I am involved in supervision. I am in charge of the unit, which includes two technicians and three assistants.'
With the closure of a major portion of the agriculture sector in Trinidad, over 10,000 people were out of work. I assisted the government in retraining and retooling some of these workers into the field of aquaculture. I assisted in developing a course and assessment package for the government, which has led to the training of over 300 people in aquaculture. Some have opened fish farms and others have even begun exporting fish. At present, I am still teaching this course for the Ministry of Science and Tertiary Education, and it has been extended to young people who have dropped out of school.

Grace Aneju is an assistant lecturer in the Department of Physics at Benue State University, Nigeria. In 2002, she was awarded a Commonwealth Academic Staff Scholarship to study for an MSc in Medical Physics at the University of Aberdeen. She feels that her award has enabled her to both gain and apply key skills and experience in her work.

'Since taking the Master’s programme, I have been teaching in the university and would say that the experience of studying in the UK has enhanced my teaching skills. I have developed both theoretical and practical knowledge in the field of medical physics, which has helped me to be a better teacher through teaching from personal experience. I have been able to contribute immensely to the training of many graduates in physics, as well as to the development of scientific skills of young physics undergraduates. I have also been able to apply some of the research skills I gained during the course to similar

Commonwealth Scholarship Commission

15 December 2011
1. The RSC is the largest organisation in Europe for advancing the chemical sciences. Supported by a network of 47,000 members worldwide and an internationally acclaimed publishing business, its activities span education and training, conferences and science policy, and the promotion of the chemical sciences to the public.

2. RSC Publishing is one of the largest publishers of chemical science information in the world. The RSC as a whole employs approximately 400 staff across the globe. The majority of staff are located in Cambridge and London (UK), although the RSC also has offices in Philadelphia (USA), Tokyo (Japan), Beijing and Shanghai (China) and Bangalore (India). RSC Publishing is a not-for-profit publisher wholly owned by the Royal Society of Chemistry. Committed to advancing the chemical sciences, any surplus is reinvested in supporting the global scientific community.

3. This document represents the views of the RSC. The RSC has a duty under its Royal Charter "to serve the public interest" by acting in an independent advisory capacity, and it is in this spirit that this submission is made.

4. The RSC believes that
   - Addressing educational provision in developing nations is a key part of building and sustaining scientific capacity, as it ensures the development of a skilled workforce for scientific research.
   - Partners in the developed world can provide valuable opportunities for knowledge exchange and resources to support research capacity in the developing world. However, it should be scientists in the developing world who determine the focus for joint research activities.
   - Coordination between government activities and work in other sectors could help to build research capacity more efficiently, addressing the needs of research according to discipline.

1. How does the UK Government support scientific capacity building in developing countries and how should it improve?

5. The UK government supports capacity building in developing countries through funding joint research programmes that bring together researchers in developed and developing countries. These programmes, funded by the Department for International Development (DFID), focus upon research areas where there is a clear link to poverty reduction and/or economic growth in the developing nation. These research partnerships focus on solutions to problems in areas such as agriculture, health and governance.

6. These partnerships can produce direct benefit through the research outputs generated, but they also provide valuable opportunities for knowledge transfer between partners in different countries. It is important to ensure that scientists in the developing world, who are part of these partnerships, are enabled to take a strong role in determining what the most appropriate research solutions for the issues facing their country are. Their partners in developed nations may be best placed to provide resources to help reach these research goals but there needs to be a stronger emphasis in encouraging scientists in developing nations to take ownership of these projects.

2. What are the most effective models and mechanisms for supporting research capacity in developing countries?

7. Models and mechanisms for development must address ‘research capacity’ in the broadest sense. Joint research programmes to help build research capacity are
important. However, programmes that target supporting aspects such as science education (ensuring a supply of adequately trained people), infrastructure (access to specialist equipment) and advocacy (increasing government engagement with scientists) are also areas that need to be addressed.

8. In 2007, the Royal Society of Chemistry (RSC) and Syngenta embarked on a £1 million, five-year project, the Pan Africa Chemistry Network (PACN).\(^1\) The remit of the PACN is wide-reaching and ambitious, given current national and global challenges. The RSC’s Chemistry for Tomorrow’s World\(^2\) has identified 41 of these challenges and the contribution of the chemical sciences in providing solutions to these. Whilst all of these challenges are outlined in a global context, some challenges such as those relating to food security, energy demand and water supply, are more pertinent to developing nations. The main aim is to enable African scientists from across the continent to communicate more effectively and find sustainable solutions ultimately to tackle these urgent problems. PACN works in collaboration with national chemical societies from across Africa to achieve this.

9. To date, two centres of excellence in Chemical Sciences have been established, one in Ethiopia (Addis Ababa) and one in Kenya (Nairobi). These provide a focal point for the training of scientists from across the region and are furnished with specialist equipment to facilitate this. Workshops to train researchers in each country, and even neighbouring countries, in key chemical analysis techniques, such as the use of gas chromatograph-mass spectrometry instruments (GC-MS) provide an active opportunity for researchers to develop their analytical skills.

10. The PACN has coordinated national and international meetings on relevant scientific issues across the continent, such as water quality, sustainable development and agricultural productivity. These meetings provide an opportunity for scientists from across Africa to network and exchange knowledge with others. In addition, output reports from these meetings have been produced which highlight the potential for chemical science research in developing nations. These reports have been disseminated to policy makers not just in Africa, but globally. The report Africa’s Water Quality: A Chemical Science Perspective\(^3\) was launched on World Water Day in March 2010 at the United Nations Environment Programme Headquarters in Nairobi. In 2010, PACN brought together experts to discuss the area of green chemistry, sustainable technologies and their development and adoption in Africa. The findings from the conference were published in the report Wealth Not Waste: Green Science and Engineering for Sustainable Growth in Africa,\(^4\) which was launched at the United Nations Economic Commission for Africa (UNECA) Committee on Development Information, Science and Technology in May 2011. The 2011 Congress, which took place between 11-13 November, focussed on the topic of Agricultural Productivity; the proceedings of this congress will also be collated into a report.

11. Knowledge exchange is an important part of building research capacity via researchers themselves. The PACN has funded schemes that have allowed African researchers to undertake research fellowships of up to 2 months, within a university research department or in industry in other parts of the world. One of these fellowships has generated an active collaboration between a researcher in Cameroon and the department which hosted him in Brazil, meaning that such initiatives can lead to long-term research benefits.

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\(^1\) http://www.rsc.org/pacn
\(^2\) Chemistry for Tomorrow’s World - A Roadmap for the Chemical Sciences, July 2009
\(^3\) Africa’s Water Quality A Chemical Science Perspective, Pan Africa Chemistry Network, March 2010
\(^4\) Wealth Not Waste, Green Science & Engineering for Sustainable Growth in Africa, Pan Africa Chemistry Network, April 2011
12. Education is a cornerstone to building research capacity. Equipping countries to train their next generation of researchers is essential. Since its inception, the PACN has carried out a number of programmes to help build teaching capacity at different educational levels. These have included programmes supplying educational resources such as Access to Chemistry, a foundation textbook, which is available online in all schools and universities across Africa. The PACN has organised several activities to support education, including teacher training workshops in Uganda, Rwanda and Ethiopia. It is important that such initiatives address the specific issues that face the teaching communities’ in these countries. A recent Experimental Chemistry Training Workshop, held at Addis Ababa University, helped teachers to develop key skills in practical chemistry and also showed how to use these to carry out experiments on a modest budget. To ensure that such capacity building is sustainable, the RSC has run training courses for teachers in Africa with an emphasis on ‘training the trainers’. This allows our programme of activities to reach a wider audience and ensures that such knowledge is embedded within the community it needs to serve. With limited resources, the PACN must focus its efforts to specific activities. However, the success of the programme means that the RSC is embarking on further fundraising to extend the reach of successful activities.

13. The concerted approach of building research capacity through education, opportunities for knowledge exchange, infrastructure and advocacy (highlighting the role of chemistry to African policy makers) is essential to the success of the network. It has helped to raise the number of opportunities available to chemists across the continent, as well as the profile of the role chemistry has to play in developing solutions in Africa.

3. How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?

14. One consideration in the further assessment of Government scientific capacity building is to examine this in relation to similar capacity building work in other sectors (see paragraphs 17 and 18 in question 5) and establish where collaboration may be beneficial.

4. What role does DfID’s Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?

15. No comment

5. How are government activities co-ordinated with the private and voluntary sectors?

16. Currently, the RSC does not formally co-ordinate with government activities in international development. We would, however welcome the opportunity to engage with government strategies via the Department for International Development (DfID) in our capacity building activities.

17. Better coordination between government via DfID and UK charities and private sector that work in building science, technology and innovation capacity could help deliver benefits more efficiently and effectively reach many more people. Organisations such as the RSC that have initiated links with scientists in developing countries can provide information on the issues surrounding capacity building in specific disciplines. Within chemistry, access to appropriate specialist equipment is critical; however programmes to train scientists in both the maintenance, as well as the use, of such equipment is essential. This has already been initiated via the PACN two Centres of Excellence in Chemical Sciences (see paragraph 8).

18. Better coordination with government activities would mean being able to build on successful programmes that help to further the RSC’s aims and objectives and complement DfID’s strategy. Chemistry as a discipline is a key contributor to a number of the research themes that are covered by the Research for Development
Programme. The programmes described above (paragraphs 8 – 11) that contribute to supporting chemistry education and developing the skills of scientists will ensure that researchers are equipped to contribute to Africa’s research base.

19. The government’s role in helping to develop the appropriate supporting climate to allow science and technology to drive economic growth in developing countries is essential. An analysis of how to rebalance capacity in governance in developing countries against capacity in science and technology could be useful to determine future priorities for the UK government in their science development activities overseas.

Royal Society of Chemistry

16 December 2011
Written evidence submitted by the
Society of Biology (Int Dev 14)

1. The Society of Biology welcomes the Committee’s inquiry into this topic which is an important part of international collaboration in science.

2. The Society of Biology is a single unified voice for biology: advising Government and influencing policy; advancing education and professional development; supporting our members, and engaging and encouraging public interest in the life sciences.

3. We welcome and support the submission of the Institute of Physics to this inquiry which helpfully notes the contribution which learned societies can and do make in this arena.

4. Many of the varied schemes supported by learned societies, institutions and individual funders, focus on closely defined approaches and settings and necessarily operate on a small scale. The small number of scientists engaged with these programmes is a significant impediment to critical review and assessment for sponsoring organisations. Given the overarching remit of the Department for International Development (DfID) it could be helpful if it could act as a repository of knowledge about these schemes as a whole, and maintain oversight of success indicators so as to allow the spread of good practice.

5. In order to address and solve global challenges a network of well-functioning international collaborations is essential. Expanded capacity for UK scientists to link with and work alongside overseas local experts would be a significant advantage in this regard. As well as supportive involvement with capacity building, and targeted help for locally-needed facilities, options to form relationships with relevant UK institutions could be valuable.

Society of Biology

16 December 2011
Member Organisations of the Society of Biology

Anatomical Society
Association for the Study of Animal Behaviour
Association of Applied Biologists
Biochemical Society
Biosciences KTN
Breakspear Hospital
British Andrology Society
British Association for Lung Research
British Association for Psychopharmacology
British Crop Production Council
British Ecological Society
British Lichen Society
British Microcirculation Society
British Mycological Society
British Neuroscience Association
British Pharmacological Society
British Phycological Society
British Society for Ecological Medicine
British Society for Immunology
British Society for Matrix Biology
British Society for Medical Mycology
British Society for Neuroendocrinology
British Society for Parasitology
British Society for Plant Pathology
British Society for Proteome Research
British Society for Research on Ageing
British Society for Soil Science
British Society of Animal Science
British Toxicology Society
Experimental Psychology Society
Fisheries Society of the British Isles
Genetics Society
Heads of University Biological Sciences
Heads of University Centres of Biomedical Science
Institute of Animal Technology
International Biometric Society
Laboratory Animal Science Association
Linnean Society of London
Marine Biological Association
Nutrition Society
Royal Entomological Society
Royal Microscopical Society
Science and Plants for Schools
Scottish Association for Marine Science
Society for Applied Microbiology
Society for Endocrinology
Society of Environmental Medicine
Society for Experimental Biology
Society for General Microbiology
Society for Reproduction and Fertility
Society for the Study of Human Biology
SCI Horticulture Group
The Physiological Society
Tropical Agriculture Association
UK Environmental Mutagen Society
University Bioscience Managers’ Association
Zoological Society of London

Supporting Members

Association of the British Pharmaceutical Industry (ABPI)
Association of Medical Research Charities
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BlueGnome Ltd
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Huntingdon Life Sciences
Institute of Physics
Lifescan (Johnson and Johnson) Scotland Ltd
Medical Research Council (MRC)
Oxford University Press
Pfizer UK
Royal Society for Public Health
Syngenta
The British Library
Unilever UK Ltd
Wellcome Trust
Wiley Blackwell
Key Points

- The Wellcome Trust is very supportive of the Department for International Development (DFID)'s activities in the area of science and international development. We consider that significant progress has been made in the areas identified in the Committee’s 2004 report on this topic.

- Capacity building is a difficult and complex activity. The most effective approaches are those that aim to strengthen the national and institutional research environment in addition to providing training and career support to individual researchers.

- Research funders, including foundations and charities, can work in partnership with government development agencies in areas where they have complementary skills and experience. The Health Research Capacity Strengthening initiative in Kenya and Malawi is a major (£20 million) partnership between DFID and the Wellcome Trust that aims to improve capacity to generate and use research evidence in Kenya and Malawi. This initiative demonstrates the complexity of capacity building and the significant challenges, as well as opportunities, it presents.

INTRODUCTION

1. The Wellcome Trust is the largest charity in the UK, spending over £600 million each year to support the brightest minds in biomedical research and the medical humanities. Over the past six years the Wellcome Trust has significantly increased its international activity and funding, spending £527 million between 2004/5 and 2009/10. The Trust’s global health strategy can be summarised as:

   - Supporting areas of science that have the potential to lead to health benefits for people and livestock.

   - Supporting international networks and partnerships focused on problems of resource-poor countries.

   - Broadening the research base for scientific endeavour in under-resourced environments.

The Wellcome Trust and DFID are working together on partnership activities totalling £44 million.

2. This inquiry focuses on DFID’s activities to build scientific capacity in developing countries. Research capacity strengthening is an important mechanism to improve the generation and use of health research evidence at the individual, institutional and/or national level. Developing a cadre and critical mass of research professionals in low and middle-income countries allows local health research priorities to be addressed. It also improves both the quality of medical and research training and the quality of the evidence used by policy-makers in these country settings. In view of the importance of these outcomes, we hope that the planned increase in DFID’s budget over the spending review period will include an increase in the resources that are invested to strengthen research capacity in low income countries.
3. The Terms of Reference for the inquiry refer to the Committee’s 2004 report on ‘The Use of Science in UK international development policy’, which identified DFID’s research capacity building activities as an area of weakness. DFID has made significant progress since the 2004 report was published, improving its ability to generate and use research evidence; more effectively integrating research and policy within its departmental structure; and strengthening links with charities and other partners. DFID is currently reviewing the Research Programme Consortia model (RPC), which has been the main mechanism used to strengthen research capacity over the past few years. The appointment of a highly capable Chief Scientific Adviser (as recommended in the 2004 report) who is also head of the DFID Research and Evidence Division (RED) has been a major driver behind these improvements.

4. The Wellcome Trust has a major partnership with DFID, the Health Research Capacity Strengthening Initiative, which is specifically focused on strengthening capacity for health research in Kenya and Malawi. We value DFID’s contribution to this partnership.

Responses to specific committee questions

Q1. How does the UK Government support scientific capacity building in developing countries and how should it improve?

5. Traditionally, the focus of capacity-strengthening programmes has been on individuals working in a low or middle-income country environment, via fellowships or other forms of personal support. More recently there has been a recognition and understanding of the need to provide institutional and in some cases, national, health research capacity strengthening support.

6. In the health research area, DFID’s main approach has been to support capacity strengthening through its Research Programme Consortia (RPCs), which aim to generate new policy-relevant knowledge that will help developing countries, the wider development community, and DFID to eradicate world poverty. DFID has been effective at commissioning research in priority areas, complementing the role of other funders who adopt a more investigator-driven approach. For example, DFID has supported research through a concordat with the Medical Research Council and a similar initiative with the Economic and Social Research Council.

7. The Wellcome Trust is involved in several partnerships with DFID, including the Global Health Trials Scheme, and the Health Research Capacity Strengthening Initiative (HRCS) in Kenya and Malawi. The latter is specifically focused on increasing the capacity for generating new health research knowledge within Kenya and Malawi, and to improve its use in evidence-based decision making, policy formulation and implementation. The Wellcome Trust and DFID committed £10 million each towards the initiative.

8. The focus of the HRCS initiative is on strengthening key academic research and health policy-making institutions, and facilitating the collaborative engagement of national representatives. An inception phase supported national task forces in the two countries, which over six months developed comprehensive five-year work plans that document activities to support the initiative's aims. In each country a new institutional entity has been established that has implemented systems for receiving, evaluating and monitoring grant applications. In Kenya the programme is implemented by a new NGO, the Consortium for National Health Research (CNHR). In Malawi, HRCS activities are housed within the Government of Malawi National Commission for Science and
9. **Key outputs from HRCS include:**

- In Malawi, the first national health research agenda for Malawi has been produced (2012-2016). The goal is to guide researchers, policy makers, programme implementers, academic institutions and other stakeholders on health research priorities for Malawi in nine key areas, including: nutrition; health systems; mental health; infectious diseases; and non-communicable diseases such as diabetes and cancer. This process has been led by the HRCS initiative in close partnership with the Malawian Ministry of Health. In addition, Masters students and key research grants have been supported in areas of identified need. Institutional support for student grants has been established to permit undergraduate research projects as part of medical and scientific training.

- In Kenya, four Centres or Research Excellence have been selected and supported: two in health systems research; one in pharmacology; and one in vector control. All have a major focus on training and core support. In many cases this is the first time that major Kenyan health research institutions have collaborated together. In Kenya HRCS also supports a successful graduate internship programme as well as research leader grants, with associated training fellowships. Closer links with the Government of Kenya are illustrated by the co-hosting, in June 2011, of the ‘First National Research-to-Policy workshop on Using Research Results’.

10. A number of challenges have been faced in setting up the HRCS initiative, particularly in Malawi, where changes in the government ‘host institution’ delayed the establishment of appropriate systems. A lack of capacity and experience to provide relevant leadership and expertise to manage the programme has also been an issue. A major review of the Malawi initiative (jointly with DFID) is planned for March 2012.

11. In Kenya, PriceWaterhouseCoopers has been contracted by the funders to establish financial management and provide technical support to the CNHR, which underwent a successful mid-term review by DFID and Wellcome Trust in 2011. CNHR now receives direct funding from both funders as it plans for long-term financial sustainability.

12. The Global Heath Trials scheme funded by the Wellcome Trust, the Medical Research Council and DFID also supports capacity strengthening. This joint scheme funds late phase trials of health interventions in low income settings, with a focus on trials which incorporate research that will lead to effective implementation of results. All research costs that are directly attributable to the trial may be included, for example:

- scientific, technical and administrative staff including statisticians, research nurses, trial managers etc.;

- consumables; major items of equipment and travel;

- holding trial steering, data monitoring and ethics committees and training and support for a trial manager.

13. Possible actions to improve the effectiveness of the UK Government’s approach to scientific capacity building activities include:
• **Increased support for capacity-strengthening as a dedicated activity.** We welcome DFID’s efforts to support capacity strengthening within its research programmes, and recognise its aim to accelerate progress in this area, by reviewing its activities and considering a more focused approach with targeted funding in future.

• **Promoting research capacity strengthening objectives through DFID’s broader activities.** For example, as part of DFID’s aid programmes (budget support) and its country-offices, DFID could encourage low and middle income countries to dedicate more resources to health research – particularly support for health and clinical workforce development in research skills and training. The country offices have some funds to spend locally on research, which could also be used to increase capacity strengthening. Some, such as the India office, already commit substantial resources to this area.

• **Expanding DFID’s range of partnerships to leverage additional funding and draw on complementary strengths.** For example, DFID can draw on the experience of funders such as the Wellcome Trust and Medical Research Council in assessing research proposals and evaluating the effectiveness of scientific programmes. As UK funders working in this area, we are currently developing further areas of joint-working and partnerships which will add to DFID’s capacity strengthening portfolio.

**Q2. What are the most effective models and mechanisms for supporting research capacity in developing countries?**

14. Capacity strengthening is a difficult and complex activity, and funders must be willing to commit for the long-term. It is difficult to identify a single right model or mechanism for supporting research capacity building, as the model chosen needs to be tailored to the specific country and research context. It can also be challenging to evaluate the relative effectiveness of different approaches. It is sensible to support a diversity of approaches, although care must be taken not to spread resources too thinly.

15. In general, effective research capacity strengthening activities are those that:

   • aim to improve capacity to both generate and use research evidence;
   
   • promote strong local ownership;
   
   • strengthen the national and institutional research environment in addition to providing training and career support to individual researchers;
   
   • acknowledge the broader policy context – for example, in the health area, strengthening capacity to undertake health research should be coordinated with parallel efforts to strengthen the clinical workforce and improve health delivery.

16. Successful capacity-building initiatives should aim to become self-sustaining over time and demonstrate the ability to leverage additional funding from other sources. Funders need to seriously consider what will happen once funding runs out and develop plans to facilitate a transition to a model which does not include dependence on the original funder. To provide sustainable solutions, funders may need to consider support for research infrastructure, building national and international research networks and developing institutional research strategies alongside the provision of research and training grants.
17. The Wellcome Trust’s African Institutions Initiative is an example of this holistic approach to capacity strengthening. This £30 million initiative aims to strengthen Africa’s universities and research institutions and help develop research networks. More than 50 institutions from 18 African countries are partners in seven international consortia, each led by an African institution. Each consortium operates independently and sets its own agenda, with the funding going directly to an African lead institution. A recent analysis of the range of capacity strengthening activities underway across the seven consortia identified a wide variety of activities including: leadership training and professional development; research training courses; competitive selection of PhD and postdoctoral fellowships; improved infrastructure (e.g. research and computing equipment); the development of financial and research administration systems; engagement and dissemination activities.

18. One of the difficulties in comparing different capacity strengthening models and mechanisms is trying to access accurate and up-to-date information about the different models which are already being used, so as to avoid ‘reinventing the wheel’. There are a number of existing initiatives and partnerships which are attempting to strengthen coordination and promote best practice in relation to international development research, including capacity strengthening aspects:

- **the UK collaborative on development sciences (UKCDS)**, a collaboration of 13 UK funders and stakeholders with an interest in international development research. UKCDS members work together to provide a more coordinated approach to development sciences research and maximise the impact of UK research funding on international development outcomes. A UK funders group specifically focused on health research is facilitated by UKCDS, of which DFID is an active member, along with the Trust, MRC and Department of Health. UKCDS also manages a research capacity strengthening group which helps UK-based stakeholders engaged in capacity strengthening to share information, learn from each other and address common issues.

- **the ESSENCE on Health Research initiative** is a collaborative framework that brings together funders of health research in Africa to share best practice, supported by a Secretariat in WHO. ESSENCE (Enhancing Support for Strengthening the Effectiveness of National Capacity Efforts) members embrace the principles of donor harmonisation and alignment with country priorities. According to these principles, donors/funders should align with priorities of countries in which they work, and harmonise their actions and procedures in order to facilitate complementarity among funders and to reduce administrative overload for recipients of funding. Projects to date have included developing a common set of monitoring and evaluation indicators, and a study assessing the true cost of research in a low-income setting.

- **the Heads of International Research Organizations (HIROs)**, which brings together a large number of major government and philanthropic funders of biomedical research to share information about new developments in the field and coordinate policy responses where appropriate. HIROs members, led by the National Institute of Health, have been contributing to the development of a mapping project called World RePORT which is an illustrative mapping database system that can be used to share information about projects across funding agencies and other organisations.

It is important for DFID to engage strongly with these initiatives – ESSENCE in particular is a key point of contact for the collation of different capacity-building models employed by the major funders working in this area.
19. As poor quality research is unlikely to be effective in improving health, the focus of capacity-building efforts must always be on building capacity to undertake high quality research. However, the research should be appropriate to the setting and the balance of funding between research, training, infrastructure and core support must ensure that the research environment, research and financial management and training elements are appropriately weighted within such programmes.

Q3. How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?

20. Evaluation needs to be fit-for-purpose. While the Wellcome Trust supports the need for robust evaluation and monitoring of scientific capacity building activities, we are mindful of the challenges in evaluating capacity strengthening activities as well as the resource implications, both for DFID and for the countries where capacity building activities take place. Evaluating the effectiveness of scientific capacity building activities can be a challenging process due to the difficulties identifying appropriate metrics and baseline measurements. For example, it would not be appropriate to simply count the number of people trained to PhD level, as the existence of a viable career structure at more senior levels will also need to be considered.

21. The availability of useful evaluation evidence will depend on the quality of the underlying monitoring data. To enable effective evaluation down the track, appropriate metrics and monitoring tools must be built into a project from the outset. Metrics must be simple and practical, to reduce the burden on grant holders and increase the likelihood of accurate reporting. The DFID logical framework (log frame) is widely regarded in this area and although more investment and focus in this area would also be welcome, additional DFID staff time and resources would need to be included to ensure it could be effectively used.

Q4. What role does DFID's Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?

22. We are not involved in DFID’s internal priority-setting process, but in general an effective CSA will have scientific credibility, a clear strategic vision, and the ability to engage in high level discussions with partner organisations. We have found Prof Chris Whitty to be a very effective CSA and one with whom the Wellcome Trust is very pleased to interact.

Q5. How are government activities co-ordinated with the private and voluntary sectors?

23. In his speech at the Wellcome Trust on 11 November, Andrew Mitchell MP, Secretary of State for International Development, articulated the Government’s vision to develop a whole-of-Government approach to international development, where DFID’s activities are integrated with those of the broader public sector, such as the Foreign Office and NHS Global. He also spoke about his desire for Government to play an enabling role, fostering international development activities conducted within the private and charity sector.

24. Charities and government aid agencies often have similar priorities and should be encouraged to work together in areas where they have complementary skills and experience. In the Wellcome Trust’s partnerships with DFID, we have benefited from DFID’s relationships with the relevant national governments, while the Trust brings expertise in designing and administering research funding programmes. These are examples of where working in partnership can deliver benefits that could not be realised by either party working alone.
25. The India-UK CEO Forum, established in July 2010 by the Indian and British Prime Ministers, has provided a useful focal point for engagement between government, private sector and other agencies around specific issues including health, skills and infrastructure. Sir Mark Walport, Director of the Wellcome Trust, is leading a work stream on health and one promising focus area of activity is the scaling-up of primary care provision in India. DFID India has been integral in developing this programme of activity and will be vital to taking forward pilot stage projects.

26. Capacity building should encompass the capacity to understand and use research evidence as well as generate new knowledge. DFID has shown valuable leadership in this area through its research communication and ‘research into use’ initiatives, and we consider disseminating scientific evidence to be an important on-going role for the department. We are concerned that the cross-government drive to reduce spending on ‘communications’ activities may have an adverse impact on this area.

Wellcome Trust

December 2011
1. How does the UK Government support scientific capacity building in developing countries and how should it improve?

1.1 The linking of earmarked support for developing science capacity in developing countries has declined markedly over the last 10 years. UK Government contributions to multilateral programmes including EC FP7 – INCODEV has disappeared and now international partners can only be included in a relatively small number of projects which have a focus on ‘value for Europe’ rather than any specific focus on capacity development for LDCs. Direct support for capacity building from DFID is no longer accessible by many UK HE institutions.

1.2 Previous forms of DFID support included the RNRRS programme (Renewable Natural Resource Research Strategy) which are now discontinued. The network developed during that era in which locally contextualised research was carried out in partnership with local academic and development partners, endures mainly through individuals who were trained to PhD level at that time and are now active in their organisations. Critically the scientific focus of their research was identified in their own country and significant periods of time were typically spent there in terms of conducting research with periods in the UK to analyse and report. Another feature of their training was the flexibility that encouraged learning between countries and individuals through cross visits between countries involved in the research.

1.3 Current funding appears to be directed towards the Research Councils and initiatives such as the UK Collaborative on Development Science. Since the formation of this organisation in 2007 it ‘ has improved communication amongst members and stakeholders, helped form collaborations and raised awareness of development sciences’. This is a useful mission but the profile appears to be very limited.

1.4 For DFID-funded Research Council programmes which target the highest quality academic outputs, partnership with LDC organisations is required, as are well developed impact pathways for successful submissions but there is only minor emphasis placed on local capacity building. These mechanisms currently lack key attributes for building long term scientific capacity in LDCs.

1.5 It is unclear how DFID views the challenges of developing the science capacity of low and medium income countries. This is important as numerically, medium income countries have larger numbers of poorer people but are likely to have very different resource profiles.
1.6 Support for British Council managed initiatives such as PMI2/DelPHE and other programmes appear ad hoc and typically restrict involvement of core University staff rather than younger contract staff that may have much to offer (such support usually does not cover UK employed staff employment).

1.7 DFID supports training of high calibre candidates from Commonwealth countries through provision of scholarships for training in the UK and distance learning. Both of these are very small investments but we have evidence for the strong development impact of the latter for programmes designed to support the learning of those employed in the Natural Resource sector. The programme in question had an interdisciplinary, problem analysis approach at its heart and used a range of innovative approaches to independent learning that supported students in challenging work and home circumstances.

1.8 A key challenge is to ensure development effectiveness post-training; our experience is that continued availability of mentorship and other support can really improve their longer term impacts. One model of such post education support is the Swedish-funded International Foundation for Science (IFS) that provides small grants to develop the of independent capacity of developing country scientists. DFID is a contributor to this organisation

2. What are the most effective models and mechanisms for supporting research capacity in developing countries?

2.1 Linking individuals and institutions in long term collaborations with UK institutions through a range of measures rather than the current reliance on ad hoc short term projects would be a far more effective approach.

2.2 Ensuring that a comprehensive understanding of the development context precedes identification of specific training and research activities is critical and a focus on split-site training where at least part of the research is conducted in the students own country are to be recommended. This has implications for both the cost and time for such training and how UK institutions administer such studentships.

2.3 Making the research ‘fit’ with the needs of the country also needs greater attention-this requires that research programmes develop capacity to adequately assess research and development needs and to ensure they match with the training specifications for students embarked on expensive postgraduate programmes. These should pay reference to the MDGs and the poverty assessments of the country themselves and multinational agencies.

2.4 Time and resource is required for developing high quality collaborations with organisations in LDCs. Collaborations need opportunities for younger people from both the UK and LDCs to become involved. Strengthened links between theory and practice at all levels are required. Internships for undergraduates and
postgraduate students with the constituency that they will return to serve should become the norm.

2.5 Improved linkages between degree awarding institution in the UKs and CGIAR centres could be strengthened cost effectively. Effective working relationships are often undermined by constraints to funding for university fees (for example under EU FP7 rules) for high calibre individuals working on projects between institutions.

2.6 Opportunities for collaboration between the HE and FE sectors in the UK and organisations in LDCs should be prioritised. The FE and vocational sectors are typically underfunded and have low profiles in LDCs and yet their roles are critical in developing practical skills, typically ignored by universities.

3. **How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?**

3.1 Simplistic analyses of ‘effectiveness’ are unlikely to be useful and our understanding of impacts is in general poor. Many of the development impacts that result from scientific capacity being built (through investments in capacity building or any other) in poorer countries are indirect and occur over long periods of time. In best case scenarios there are powerful multipliers/secondary impacts that need to be assessed in addition to primary effects. Case studies of recipients of previous training/research investment would be useful in terms of identifying the level and quality of these impacts. ‘Best’ and ‘worst’ cases would hopefully allow better targeting (of organisations and individuals) and more programme design.

4. **What role does DFID’s Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?**

No comment

5. **How are government activities co-ordinated with the private and voluntary sectors?**

No comment

School of Natural Sciences, University of Stirling

16 December 2011
Summary

1. The Academy of Medical Sciences welcomes the opportunity to respond to the House of Commons Science and Technology Committee inquiry into science and international development. The Academy is an independent body that represents the spectrum of medical science and seeks to improve health through the application of research. Our elected Fellows include some of the world’s foremost experts in global health who have contributed to this response and would be happy to provide oral evidence to this inquiry. The Academy’s response focuses on medical science, although some of the issues raised may be relevant to other disciplines.

2. Medical science can make an important contribution to international development and medical research capacity building in developing countries can help achieve this goal. The Academy commends the Government’s continued support for international development, as well as the Department for International Development’s (DFID’s) commitment to science and efforts to build medical research capacity. Opportunities to further strengthen medical research capacity building include:
   - Putting sustainable and equitable academic partnerships at the heart of efforts to build medical research capacity.
   - Supporting a balance between strengthening individual capacity, strengthening institutional capacity and strengthening the capacity of national research systems.
   - Strengthening monitoring and evaluation capacity, and supporting methodological improvements in this field.
   - Providing additional resources to ensure that both the capacity building and the research components of DFID’s initiatives are sufficiently funded.
   - Using the UK’s role on major global health decision making bodies to advocate for medical research capacity building internationally.
   - Helping researchers from developing countries to apply their skills at home through mechanisms such as ‘return home grants’, establishing endowments at academic institutions in the developing world and helping academic institutions provide better career development and administrative support for researchers.
   - Reintroducing DFID’s competitive grants programme and ensuring that criteria for decision making about funding for medical research and capacity building is clearer.

3. The Royal College of Physicians, Academy of Medical Sciences, Wellcome Trust, Universities UK and the Bill and Melinda Gates Foundation recently held a major international meeting on global health partnerships and capacity building. We would be happy to share the report of this meeting with the committee, which we expect to be published in the early 2012.
Introduction

4. Medical science has an important role in alleviating extreme poverty. Research indicates that every £1.00 invested in public or charitable research into cardiovascular diseases in the UK between 1975 and 1992 produced a stream of health and economic benefits equivalent to earning £0.39 per year in perpetuity.¹ While we are not aware of a similar study for medical research in developing countries there is reason to believe that medical research, health and wealth are closely linked. For example, it has been estimated that malaria has slowed growth in Africa by 1.3% per year since 1965 and medical advances have helped reduce malaria deaths globally by 20%.²,³ We therefore commend the UK Government's continued support for international development and the priority that has been given to research and health in achieving this goal.

5. The Academy strongly supports long-term, sustainable efforts to build medical research capacity in developing countries and believes this should be a priority for the DfID. Building medical research capacity contributes to international development; a strong research base can help developing countries in a number of ways, including:
   - Strengthening their role in global medical research and reducing the need for future development assistance.
   - Tackling local health challenges such as neglected diseases that might not otherwise be addressed by researchers from elsewhere.
   - Developing health solutions that are more relevant to the local context such as how drugs previously tested elsewhere work in local populations.
   - Strengthening local health service delivery, education and policymaking by generating and providing access to cutting edge and locally relevant evidence.
   - Encouraging local researchers to stay and work in their home country rather than move abroad thereby reducing ‘brain drain’.
   - Stimulating local life science industries and the local economy.
   - Building up science as a component of a country’s overall culture.

6. Medical research capacity building in developing countries benefits the UK as it increases opportunities for international collaboration. To help realise this opportunity, UK universities should take a longer-term, more global view of science by engaging students early with these issues.

7. The Academy welcomes DfID’s strong commitment to science and its efforts to support medical research capacity building. These include:
   - DfID-Wellcome Trust Health Research Capacity Strengthening Initiatives in Kenya and Malawi⁴,⁵

⁴ Further details are available from: http://projects.dfid.gov.uk/project.aspx?Project=113982
⁵ Further details are available from: http://projects.dfid.gov.uk/project.aspx?Project=114075
• Research Programme Consortia that include a capacity building component
• Commonwealth Shared Scholarships

8. Medical research is inextricably linked to education and health service delivery so capacity building in these three areas should be coordinated. Much would be gained from an increased focus on higher education that has previously received limited attention.

9. The UK is a major beneficiary of the migration of doctors from developing countries some of whom are researchers. One recent study of the financial cost of doctors emigrating from nine Sub-Saharan African countries estimated that the UK gained $2.7bn from this process while some African countries lost out. Investing in research capacity is therefore not just about aid but also an obligation to repay the debt that the UK owes the countries that originally trained the staff.

**Improving UK Government support for scientific capacity building**

**Ensuring capacity building is sufficiently resourced**

10. The Academy welcomes DfID’s efforts to include capacity building in their research programmes. However, this additional capacity building function sometimes has to be undertaken using existing resources. Additional resources would help ensure both the capacity building and other aspects of research programmes can both be successfully progressed. Part of the forthcoming increases in DfID funding might be directed toward this endeavour.

11. Scientific excellence should be a major factor when making decisions about medical research capacity building. Experience shows that while government can identify overall strategic priorities for science, scientific experts are best placed to identify particular projects. Currently it is not always clear how DfID decides what to support and it would be helpful if this process was more transparent. We believe DfID should consider re-introducing its successful competitive grants programme that provided significant funding for important initiatives.

**Promoting capacity building through international institutions**

12. One important opportunity for DfID and the UK Government to promote medical research capacity building is through the UK’s membership of major global health decision making bodies such as the World Health Organisation (WHO) and the Special Programme for Research and Training in Tropical Diseases (TDR). As one of the most important advocates for global health and international development the UK is well placed to help shape the policy agenda and ensure research capacity building is an international priority.

**Models and mechanisms for supporting research capacity in developing countries**

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Global health partnerships

13. Sustainable and equitable international partnerships between academic institutions offer an excellent mechanism to build medical research capacity in developing countries. One major advantage of this approach is cost effectiveness because the financial input remains under the direct control of the partners rather than going through external parties that might redirect resources elsewhere. Another benefit is the increased scientific impact achieved through such international collaborations, which increases for each additional international author up to around ten.8 Partnerships allow UK universities to provide technical support and expertise to developing countries to help build capacity. In the UK, the Wellcome Trust has been a strong supporter of this sort of activity. Examples of successful north-south partnerships involving UK institutions include:

- The Malawi-Liverpool-Wellcome Trust Clinical Research Programme.9
- The partnerships between the University of Oxford and Sri Lanka.
- The London School of Hygiene and Tropical Medicine and several Tanzanian institutions.
- Partnerships involving the University of Oxford, Wellcome Trust and institutions including the Oxford University Clinical Research Unit in Vietnam, Mahidol University in Thailand and the KEnya Medical Research Institute (KEMRI).10,11,12

14. Historically many partnerships have been between institutions in the global north and south. Increasingly, however, partnerships are developing between southern institutions. South-south partnerships break the model of the one way transfer of knowledge and technology from north to south and often involve a greater degree of trust through shared experience, geography and language. South-south partnerships between institutions with different levels of resource can help engage countries with fewer partnerships through a ‘hub and spokes’ model. Examples of south-south partnerships, some of which are at least partly funded from the UK but with southern leadership, include:

- Wellcome Trust African Institutions Initiative.13
- Initiative to Strengthen Health Research Capacity in Africa (ISHReCA).14
- PRogramme for Improving Mental healthcarE (PRIME)15

15. While partnerships offer considerable benefits, like most efforts to build research capacity they require substantial long-term resources over many years. DFID should ensure that partnerships receive sustained core funding with appropriate safeguards to halt support for those partnerships that are not working.

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9 Further details are available from: http://www.mlw.medcol.mw/
10 Further details are available from: http://www.tm.mahidol.ac.th/en/wellcome/index.html
11 Further details are available from: http://www.wellcome.ac.uk/Funding/International/Major-Overseas-Programmes/Vietnam/index.htm
12 Further details are available from: http://www.kemri-wellcome.org/
13 Further details are available from: http://www.wellcome.ac.uk/Funding/International/WTX055734.htm
14 Further details are available from: http://ishreca.tropika.net/
15 Further details are available from: http://www.health.uct.ac.za/research/groupings/prime/about
16. Various individuals and organisations have developed principles to help guide the establishment and development of equitable global health partnerships. Common messages include the need for:
- Clearly defined focus, roles, responsibilities and objectives that have been established through consultation.
- Shared decision making, mutual trust and respect
- Local ownership with progressive independence of the partners from the developing country
- Monitoring and evaluation
- Staff training and development
- Support of national and regional health priorities and socially relevant research
- Application of research findings to policy and practice

17. We welcome DfID’s support for partnerships as a tool to build medical research capacity in Africa and would encourage DfID to support partnerships in India and South East Asia. Sustainable and equitable academic partnerships should be at the heart of DfID’s efforts to build medical research capacity and particular attention should be given to supporting south-south partnerships. This echoes the messages of the influential WHO report ‘Genomics and World Health’.  

Comprehensive capacity building

18. Many previous efforts to build medical research capacity in developing countries have focused on individuals. However, without strong institutions and strong national research systems individuals will not flourish. For instance, skilled researchers will find it difficult to be successful without support such as IT, finance, buildings, administration, suitable national funding systems, equipment and appropriate regulation. Examples of initiatives that involve institutional and national capacity building include:
- Malaria Capacity Development Consortium
- Consortium for National Health Research in Kenya
- European and Developing Countries Clinical Trials Partnership (EDTCP)

19. When building medical research capacity DfID should seek to support a balance of strengthening individual capacity, institutional capacity and the capacity of national research systems. Specific opportunities include:

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22 Further details of the Malaria Capacity Development Consortium can be found at: http://www.mccconsortium.org/
23 Further details are available from: http://cnhrkenya.org/
24 Further details are available from: http://www.edctp.org/
• Training future research leaders from developing countries in governance, management and leadership earlier in their careers.
• Establishing research support centres that help with matters such as budget review, administration, grant writing and ethics.
• Creating champions for capacity building and global health partnerships at senior positions within academic institutions.
• Supporting core costs for emerging research centres in developing countries through untied grants for expenses such as IT systems, financial management and grants management.

**International interchange**

20. One effective mechanism to help build research capacity in developing countries is international interchange. This approach can be particularly effective where individual researchers are hosted in an institution, either in the same country or abroad, for several weeks or months to learn a particular technique, which can be implemented on their return home. Where possible reciprocal exchanges should take place to develop more sustainable and productive links and collaborations.

21. The Academy currently administers a travel fellowship scheme between the UK and Middle East in partnership with the Daniel Turnberg Trust Fund. Participants at a recent international workshop between UK and Brazilian scientists organized by the Academy, FAPESP and Science and Innovation Network (SIN) office in Brazil highlighted the potential value of annual residential summer school for early career researchers as a mechanism for interchange and capacity building.

**Retaining researchers in developing countries**

22. Limited opportunities and support at home means that many researchers from developing countries emigrate in search of better opportunities elsewhere. Often this is to the country in the north where they received education and training. Southern researchers who are trained in the north sometimes gain skills that are less useful when they return home. This too can lead them to emigrate. Retention of post-doctoral students from developing countries is a particular challenge as there are major gaps at this stage in their careers.

23. The UK has a good record of helping researchers from developing countries who trained in the UK to undertake work in their home country. To further help ensure ‘brain drain’ does not undermine capacity building DfID and the UK Government should help:

* Provide researchers from developing countries who spend time training in the global north with ‘return home’ grants that cover salary and research support for a reasonable period of time upon returning home.
* Assist academic institutions in developing countries by establishing endowments to support research careers to reduce job insecurity and allow clinical academics in particular ring fenced time for research.

25 Academy of Medical Sciences (2009). *Response to the DfID inquiry on Eliminating world poverty and securing our common future* [http://www.acmedsci.ac.uk/p100puid152.html](http://www.acmedsci.ac.uk/p100puid152.html)
26 Further details of the Academy’s scheme can be found at: [http://www.acmedsci.ac.uk/p175.html](http://www.acmedsci.ac.uk/p175.html)
• Assist academic institutions in developing better support for researchers such as mentoring, networking opportunities and training in grant writing, advocacy and ethics.

24. The Academy will shortly be publishing a booklet about its mentoring scheme that we plan to disseminate internationally and may be of use in helping others develop similar schemes to support the careers of researchers in developing countries.

Monitoring and evaluating scientific capacity building

25. Monitoring and evaluation are vital components of efforts to build medical research capacity. Measures for assessing the impact of capacity building should encompass:

• Individual measures such as the number of people trained to doctorate level; number of post doctoral students and more senior staff holding their own peer-reviewed grants; proportion of research staff based in the partnership country; and proportion of staff lost to the 'brain drain'.

• Institutional measures such as overall grant income from peer reviewed competitive sources; impact profile of publications; robust procedures to manage research grants and provide supportive career structure for researchers; and evidence that the relevant institutions are playing a leadership role in coordinating international research collaborations.

• Policy impact of research such as case studies of how the research in the relevant institutions has supported evidence based policy decisions.

• Intellectual property and innovations that have resulted from the research undertaken as a result of the capacity strengthening activities.

26. At present evidence about medical research capacity building is limited and too often not undertaken. DfID is well placed to help strengthen monitoring and evaluation capacity and support improvements in methodologies in this field.

Coordinating with the private and voluntary sectors

27. We believe that DfID coordinates well with many Non-Governmental Organisations (NGOs), however, there are also opportunities to engage more with industry from developing countries. Many companies from developing countries have considerable resources that might be harnessed to help build medical research capacity for the public good. There are also opportunities to engage southern governments, southern funders and southern philanthropists that have to date only had limited involvement in this area. When engaging industry and others in medical research capacity building it will be important to ensure that no single partner dominates the agenda.

28. SIN have been helpful to our Fellows in their efforts to build capacity, particularly the offices in Singapore and South Africa. The UK Government should consider widening the reach of SIN so that it covers more countries. There are major opportunities for the overseas offices of British
governmental organisations in India to engage more with global health partnerships and capacity building, and greater support and attention should be given this goal.

Declaration of interests
Many of the Academy’s Fellows including some of those who contributed to this response are involved directly or indirectly with efforts to build medical research capacity in developing countries some of which have been used as examples in this response.


The Academy of Medical Sciences

16 December 2011
Coordination:

1. It is important to have effective coordination amongst UK funders of international development in relation to scientific capacity building. In this context, DFID works with the UK Collaborative on Development Sciences (UKCDS) which is a partnership between Government departments, the Research Councils, the Scottish Government and the Wellcome Trust. UKCDS also runs a research capacity strengthening group, which has an expanded membership including the Royal Society, the British Academy and the British Council. This group provides a useful forum for sharing information and knowledge, and could be used more in the future to encourage closer collaboration amongst UK funders.

2. Another useful cross-Whitehall group, which also includes learned academies and the British Council, is the Global Science and Innovation Forum (GSIF). GSIF leads on the strategy for the UK’s international engagement in science and innovation which covers four key areas: research, innovation, influence and development. We see the latter as being a critical component of the UK’s international strategy and we would recommend a consistent focus on this, together with a strong DFID presence at the group meetings of core officials. The group would benefit from regular development-related items, perhaps bringing in specialist expertise from relevant DFID sector advisors as appropriate.

3. The UK’s international strategy and initiatives in this area also benefit from effective coordination between international donors, such as other national governments and global foundations. Co-ordination at a country level would also be beneficial, to avoid duplication of effort and maximise synergy. This is best delivered in-country by a strong national body and DFID should consider how best to support target-country governments in order to achieve this. There are already good examples of coordination between DFID and others, for example their work with IDRC and the Wellcome Trust to deliver needs-driven support in the Health Research Capacity Strengthening Initiatives in Malawi and Kenya.

Environment for research:

4. For science and technology to be an effective tool for development, there is a need to build a supportive environment for research, beyond working with individual researchers and research groups. In key target countries DFID should consider how best to support scientific infrastructure, including strengthening national research bodies (e.g. research councils, national science foundations) which are independent of short term political influence, have secured long-term funding, and are able to define and set priorities, and assess and monitor the quality of in-country research.

5. Ensuring a stable and openly competitive career structure for young researchers is also a vital part of building national capacity. Linked to this is the need to enable researchers in developing country institutions to participate in the global scientific community, through supporting short-term mobility and developing specialist communication skills. British Council’s INSPIRE project is an example of this, where we support mobility of researchers from Afghanistan, Bangladesh, Pakistan, Kazakhstan and Uzbekistan. We
have also piloted ‘English for Researchers’ modules in the wider South Asia region to support communication skills.

6. Another important aspect of building an effective research environment relates to developing public understanding and communication on science and research. British Council uses a modest amount of grant funding (approximately £80,000) to run the FameLab International, a partnership with Cheltenham Science Festival, which builds communication skills in young scientists and inspires an interest in science amongst the wider community. FameLab currently runs in 21 countries, including Egypt, Georgia, Serbia and South Africa.

Evidence-based policy making:

7. DFID funded research can often be used by decision-makers to inform policy on global issues such as health, agriculture and energy. However, sometimes there is a gap between research outputs and their use as evidence in policy-making. DFID has a strong track record in making connections between research and policy development and should build on this success to continue bridging the gap between scientists and research users. The involvement of local stakeholders, including the private sector, local communities, civil society organisations, the scientific community and government, is vital to this process.

Innovation:

8. DFID has supported innovation through its funding of research consortia and capacity building. In developing countries, the private sector has the potential to be a driver of innovation. In addition, innovation often comes out of demand rather than supply-driven research. Recognising that DFID may not have the capacity to work with a proliferation of individual researchers, it would be beneficial to explore organisational mechanisms for stimulating innovative research of this nature. In knowledge economy work, models exist for linking SMEs with the research base. Here, too, it is recognised that the organisational mechanisms for coordination would have to be put in place for DFID to engage with SMEs in bridging the gap between the research base and small scale business. British Council runs the African Knowledge Transfer Partnership (AKTP) scheme to link business and the knowledge base through talented individuals; this initiative is based on the UK Knowledge Transfer Partnerships scheme (run by the UK’s Technology Strategy Board). AKTP is now running in Ghana, Nigeria, Kenya, Uganda, and starting up in Rwanda, South Africa and Ethiopia

Ownership:

9. There needs to be a strong sense of ownership by southern partners in research partnerships. In the Development Partnerships in Higher Education (DeIPHE) programme, which British Council manages, this is rated highly. DeIPHE is a DFID funded initiative which runs from 2006 – 2013, with a total budget of £15 million. The aim of DeIPHE is to strengthen the capacity of higher education institutions (HEIs) to contribute towards the MDGs and promote science and technology related knowledge and skills.

1 See Mid-term Review of the DFID Development Partnerships in Higher Education Programme (DeIPHE), Terry Allsop and Paul Bennell, October 2010, DFID Human Development Resource Centre 276252.
10. 200 projects have been funded to date with an average project budget of around £65,000 over three years. DelPHE fits with core DFID themes in contributing towards each MDG. The majority of funding is allocated to eradicating extreme poverty and hunger; combating HIV/AIDS, malaria and other diseases; and ensuring environmental sustainability.

11. Capacity development of HEIs covers two main activity areas: (i) researchers themselves through collaborative research and product development, preferably with a partner with significantly greater research capacity; and (ii) improved training provision in order to enhance the knowledge and skills of students and other target groups, including groups in the wider community. DelPHE runs in the 22 countries with which DFID has public service agreements (PSA countries).

12. DFID aid is untied so other northern HEI partners have been able to participate in the DelPHE programme and South-South partnerships (with no UK institutional involvement) have been actively encouraged and promoted. Uniquely therefore, DelPHE has 22 South-South partnerships where there is no UK partner involved. These result in cross country and cross regional collaboration and also give total ownership to the Southern partners. This supports national ownership as stated in the Paris Declaration on Aid Effectiveness.

13. Southern Universities benefit from DelPHE through the improvement in their academic capacity by managing partnership finances and leading on partnership implementation. They are able to establish a credible track record to secure future funding from donors and share knowledge and best practice across their regions as they modernise their curricula in a way that is relevant in the fast changing world of today. There are also benefits for Southern Governments as they use the research and academic expertise of their HE sector to influence and stimulate policy debate and pursue achievement of Millennium Development Goal targets.

14. UK HEIs still benefit from these as such partnerships strengthen research leadership in developing countries which lead to stronger mutual partners in the future. Additionally, DelPHE improves UK HEIs international profile, which may lead to increased international student recruitment. Some UK partners have also reinforced their position as world leaders in a variety of science and technology related fields in for example, agriculture and health. DelPHE also supports 68 multi-lateral projects which have all increased scalability, value for money, cross regional working, international sharing of best practice, lessons learnt and networking.

Declaration of Interests

In 2010-11, the British Council's overall turnover was £693 million, with funding from a variety of sources. Just under a third (28 per cent or £196 million) came as government grants. The largest proportion (56 per cent or £387 million) came from selling services such as English language courses and examinations, and from management fees and other partnership income. We also received about £4 million in other income and £105 million in restricted income (funding from contract activity) for running programmes for the UK Government and the European Union. In this respect our main declaration of interest is the management of the DFID funded DelPHE programme.

British Council
16 December 2011
Key Points

- ESSENCE on Health Initiative is supportive of the Department for International Development (DFID)'s activities in the area capacity strengthening for health research.

- International research funders work in partnerships and bring complementary skills and experience. DFID proactively engages in partnerships with the UK and other international partnerships to increase the effectiveness of its investments and efforts.

ESSENCE on Health Research Initiative and the DFID

- In recent years the global health landscape has become crowded with new initiatives, leading to concerns that internationally-funded research projects may not match national priorities and sometimes may even inadvertently work against them. At the same time, multiple donors often fund the same project, with each one demanding different criteria for its evaluation process.

- ESSENCE on Health Research initiative is a collaborative framework that brings together funders of health research in Africa to share best practice, supported by a Secretariat the Special Programme on Research and Training for Tropical diseases (TDR) at the WHO.

- ESSENCE (Enhancing Support for Strengthening the Effectiveness of National Capacity Efforts) members embrace the principles of donor harmonization and alignment with country priorities. According to these principles, donors/funders should align with priorities of countries in which they work, and harmonize their actions and procedures in order to facilitate complementarity among funders and to reduce administrative overload for recipients of funding.

- ESSENCE on Health Initiative is open to a broad range of funders interested in collaboration, harmonization and better alignment with country needs. Some of the current members include the United Kingdom Department for International Development (DFID), Canada's International Development Research Centre (IDRC), Norwegian Agency for Development Cooperation (Norad), Ministry of Foreign Affairs of Denmark (Danida), the Bill & Melinda Gates Foundation, FIOCRUZ Brazil, Howard Hughes Medical Institute, NEPAD (New Partnership for Africa’s Development), EDCTP (European and Developing Countries Clinical Trials Partnership) and NIH/FIC (US National Institutes of Health/Fogarty International Center), Rockefeller Foundation and Canada's Global Health Research Initiative (GHRI).

- ESSENCE members embrace the strong agreement within the international development and research communities that funding should be aligned with national priorities. The initiative recognizes that successful research capacity also requires competencies in issues such as governance and management, strategic planning, evidence assessment, ethics and translation of evidence into policy.

- ESSENCE provides a platform for comparing different capacity strengthening models and mechanisms and compile accurate and up-to-date information about the different models which are already being used. ESSENCE is a unique partnerships which is attempting to strengthen coordination and promote best practice in relation to international development research, including capacity strengthening aspects.

- With its focus on health research, ESSENCE builds on the principles of the Paris Declaration on Aid Effectiveness and the Accra Agenda for Action, which set standards for good practice in international aid.
ESSENCE made its first major step with the development of a framework document that is designed to harmonize the planning, monitoring, and evaluation of international health research programmes. The document is designed to create a common methodology and common indicators that donors can use to assess their research capacity-building programmes. Another study under way is assessing the true cost of research in a low income setting and will help harmonize policies and practices of funding agencies.

DFID is a full and active member of the initiative. It takes advantage of the platform to increase the effectiveness of the efforts and also bring a wealth of knowledge and experience that is quickly shared with other members of the initiative.

For further information on ESSENCE please visit:  
http://apps.who.int/tdr/svc/partnerships/initiatives/essence

ESSENCE on Health Research Initiative

16 December 2011
1. **How does the UK Government support scientific capacity building in developing countries and how should it improve?**

1.1 On behalf of the UK, the Department for International Development (DfID) holds the lead role for promoting bilateral and multilateral programmes of international development work through capacity building in developing countries. DfID has a strong focus on Millennium Development Goals (MDG) 4, 5 and 6.

1.2 The Health Partnership Scheme (HPS) funded by DfID was launched in 2011 and was welcomed for harnessing the expertise of UK health professionals to improve health outcomes by transferring skills and supporting skills development in low income countries.

1.3 The *Health Is Global* outcomes framework meanwhile outlines the UK Government’s commitment to driving forward improvements in global health by 2015.

1.4 Under the framework, the Health Protection Agency (HPA) is tasked with improving global health security and undertaking global health research initiatives. Both of these tasks assist implementation of the WHO International Health Regulations by proposing, funding and delivering public health capacity building activities in both developing and priority countries.

1.5 In spite of the numerous project proposals arising from DfID work programmes and the outcomes framework, there still remains a need for greater coordination between UK expert agencies and government departments, in particular DfID, in order to maximise outcomes.

1.6 Typically, UK agencies are the national experts in their respective fields. It is only appropriate that government departments directly consult with and involve these agencies where work programmes are focused on their areas of expertise.

1.7 Where DfID funding for capacity building activities has been made available to UK agencies, for instance HPS, the focus has principally been focused on a narrow aspect of international development, i.e. just MDG 4, 5 and 6.

1.8 Prior to HPS, there were reports of UK institutions recruited to DfID-commissioned projects, but only where an overseas organisation had successfully bid for a tender and subsequently sub-contracted the aforementioned institution.

1.9 This secondary involvement raises questions over existing procurement processes that insert an additional financial cost to the UK taxpayer, as well as an oversight by DfID to engage with UK institutions directly.

1.10 This short-coming is in some part due to the poor awareness among DfID staff of the work of UK agencies. The public health capacity building elements of DfID programmes are examples of where UK experts should have ideally been consulted or recruited for the actual programmes. Without soliciting input from key UK agencies, such as the HPA, these DfID programmes can only be regarded as sub-optimal.

1.11 It is widely regarded that institutional links form the basis for strong, long-term relationships. As a platform to share ideas and information, as well as promote collaboration and exchanges in support of capacity building, these links require two issues to be addressed: how to forge links between institutions in the UK and developing countries; where to find long-term funding.
1.12 While the HPS provides a health brokerage service, this does not give UK agencies access to DfID’s considerable network of overseas contacts. These should be shared with UK agencies in order to allow experts to forge the scientific links crucial to progressing capacity building. Inviting UK agency representatives to meetings between DfID and overseas institutions would also benefit this process and allow early input by UK experts.

1.13 The core funding and remit of most UK agencies is limited by national boundaries. DfID holds significant funding for capacity building activities overseas, it has not implemented a long-term mechanism to allow UK agencies to access DfID core funding directly.

1.14 Ironically, many of DfID’s priority countries have at one time sought direct assistance from the HPA, but due to lack of funding, collaboration was not initiated. Had DfID funding been made available in those instances, a long-term link may have followed. Furthermore, any expertise gained by the HPA would then have benefited the HPA and DfID.

1.15 The poor acknowledgement of and coordination with UK agencies to date has meant that any existing DfID links have not capitalised on the expertise that the UK holds.

1.16 The need for DfID to coordinate with and involve relevant UK agencies in their capacity building activities is critical to longer-term approaches to capacity building in a holistic manner in low income countries.

2. What are the most effective models and mechanisms for supporting research capacity in developing countries?

2.1 UK agencies, such as the HPA, are often the national leads in their respective fields and have equally strong track records in conducting research.

2.2 This experience positions UK agencies to support institutions in developing countries and raises questions as to why they are not more greatly involved by DfID. In particular, commissioning of research by these agencies.

2.3 The importance of institutional links applies also to supporting research capacity. The WHO Laboratory Twinning Initiative and the EU Twinning Scheme are current examples.

2.4 As with capacity building, DfID must coordinate and collaborate with UK agencies more in order to capitalise on existing national expertise. To disregard these institutions would only mean that DfID had failed to acknowledge and involve recognised UK experts.

2.5 Funding is also a limiting factor for UK agencies wishing to support research capacity in developing countries. This again relates to restrictions placed on national funding, but presents an opportunity for DfID to establish a long-term mechanism to fund the research support role that UK agencies could play.

2.6 As with all global health research initiatives, enhanced research capacity would serve to protect the UK population at a distance.

3. How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?

3.1 DfID contributions to multilateral organisations and activities underwent an extensive review in 2011 highlighting strengths and weaknesses.
3.2 With respect to *Health Is Global* activities, an independent review is conducted annually. Identified deliverables are also measured and reported against at six to 12 monthly intervals.

3.3 Given the possibility of follow-up activities, assessment of the degree of coordination with government departments would be welcomed.

4. **What role does DfID's Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?**

4.1 DfID’s Scientific Adviser is well positioned to liaise with partner institutions, including voluntary and private sector partners, where UK institutions play either a lead or a support role in long term relationships.

4.2 It is common for new UK partners to repeat the work of previous partners when engaging with overseas institutions. Training for UK participants would help to mitigate this problem, though ideally an online development network hosted by the Scientific Adviser would assist UK scientific staff working in developing countries to exchange the lessons they have learnt, and perhaps learn a little about development.

4.3 The Scientific Adviser could play a role in helping developing country ministries and professional associations to clarify the science policy, qualifications and career structures of scientists in the target countries. This would only be appropriate where the UK was a lead partner and required coordination with other donors.

4.4 One key issue in connection with career structures is the associated pay levels. Until recently this has not been an area in which donors would assist but this now seems to be changing and some donors directly or indirectly subsidise staff salaries. Clearly such arrangements are sensitive and require long term commitment.

5. **How are government activities co-ordinated with the private and voluntary sectors?**

5.1 n/a

Health Protection Agency

16 December 2011
Written evidence submitted by the British Academy (Int Dev 21)

Introduction

1. The British Academy is pleased to respond to the inquiry commissioned by the Science and Technology Inquiry to look at the way in which the UK Government supports scientific capacity building in developing countries.

2. As the UK’s national academy for the humanities and social sciences we are keen to promote the fundamental role which our disciplines play in understanding the cultural and societal context for sustainable development, and the distinctive contribution which can be made by social sciences and humanities (SSH) researchers in identifying methods for poverty alleviation. The social sciences and humanities disciplines are essential in addressing areas such as empowering girls and women, boosting wealth creation, strengthening governance and security, and combating climate change. We are concerned that “scientific” capacity building should not be narrowly defined to refer only to the STEM subjects, and that the value of the humanities and social sciences in improving and sustaining the best development and humanitarian outcomes should not be underestimated.

3. The British Academy engages with capacity building issues in a number of ways. Since 2006, we have run an international capacity building programme with a focus on equitable partnership and sustainability. The International Partnership and Mobility scheme is intended to build long-term institutional links between the UK and developing countries based around a programme of research and training. Working with the Association of Commonwealth Universities and other partners, we have also led the development of what is being termed ‘the Nairobi Process’ which proposes a series of frameworks for improving humanities and social sciences research in Africa. Born out of the Nairobi Report\(^1\) published in 2009, the process incorporates a number of initiatives focussed on issues of research capacity, and a follow up report, Foundations for the Future\(^2\), centred on the challenges faced by, and support for, the next generation of African academics, will be launched by the British Academy at in February 2012 and an advance copy can be made available to the committee.

How does the UK Government support scientific capacity building in developing countries and how should it improve?

4. The UK Government has primarily supported scientific capacity building through programmes funded by DFID and run with other bodies, such as the British Council and the ESRC. DFID has actively pursued a research capacity strengthening agenda over the past decade and a half, with funding focussed on programmes and centres, rather than individual projects, and a growing emphasis on South-South collaboration, and capacity-building as an objective.

\(^1\) British Academy/ ACU, 2009 The Nairobi Report: Frameworks for Africa-UK Research Collaboration in the Social Sciences and Humanities

\(^2\) British Academy/ ACU, 2011 Foundations for the Future: Supporting the early careers of African researchers
5. Though capacity building activities were identified as “an area of weakness” by the Science and Technology Committee’s 2004 report on *The Use of Science in UK international development policy*, we believe that a large part of their limited success has been due to the complex nature of capacity building, and the difficulties inherent within this, rather than being solely the result of failings on the part of DFID. However, there are a number of ways in which support for capacity building can be improved.

6. Long-term, sustainable approaches should be developed as opposed to short term solutions. Building capacity is by definition a long term and multi-layered endeavour, particularly for institutions and research cultures where initial capacity is low. However, DFID has traditionally adopted a more short-term outlook.

7. The UK Government should make strengthening research capacity a more integral part of its development work. DFID’s main priority is poverty alleviation, and the short-term measures frequently associated with this are often at odds with the need to develop long-term strategies for fostering sustainable research cultures and developing capacity. Approaches should take account of the contribution which a strong, local research base could make to poverty alleviation in the longer-term. Developing country researchers need to be involved in identifying and tackling problems in their communities; the development of well trained and knowledgeable people in enabling local research environments which can produce locally-generated data and analysis required to inform evidence-based policy making at the national and regional level needs to be the focus of greater development efforts.

8. Smaller grants should be made available for capacity building activity. Large programmes can struggle to maintain coherence and focus in their project designs, and the pattern of making fewer, larger consortia grants reduces the different points of view around development theory and policy. An introduction of smaller grants (around £200k), following the Social Science Research Council model in the USA, would also better support the contribution made by SSH, which typically benefits from a smaller, more participative, project scale. Furthermore, smaller scale projects are more likely to secure the involvement and leadership of researchers within developing countries, given that the low levels of administration available to them often precludes their engagement with larger projects.

9. Application procedures for schemes involving developing countries should be simplified. Current processes have earned criticism for being vastly over-complex and for serving as a deterrent to good potential applicants in developing countries. The procedures used by the Leverhulme Trust, the Humboldt Foundation and the British Academy, are suggested as alternatives.

**What are the most effective models and mechanisms for supporting research capacity in developing countries?**

10. Any effective model for supporting research capacity in developing countries will need to take into account the interdependence between the three levels of capacity building, as referred to by DFID:\(^3\): Individual (the development of researchers to undertake research);

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\(^3\) DFID, 2010 *How to Note: A DFID practice paper*
Organisational (developing the capacity of organisations to manage and sustain themselves) and Institutional (changing the context and the resource base in which research is undertaken).

11. An approach which does not provide support at all three levels is unlikely to yield success. Support targeted at individual researchers may produce quick results, but without the appropriate organisational frameworks to make research careers attractive, the individual is likely to leave the organisation for a better one, often in the global North, causing a loss of local capacity and propagating brain-drain. Similarly, any approach which focuses on improving organisational capacity will fail unless the individuals operating within the organisation are fully involved in the process. Support at the institutional level is also crucial, and local ownership of activity is an important factor here. External funding for capacity building is unlikely to produce results if there is a lack of support from the partner country, or if it cannot overcome local problems which make it difficult to undertake research.

12. Mechanisms for supporting research capacity will also need to be flexible to take into account the complex conditions within which capacity building occurs, particularly within the fragile states which represent 20 of DFID’s 27 priority countries. Funders should be prepared for experiments that fail, and for programmes and projects which may need to be adjusted over the course of their duration.

13. In cases where research capacity is developed through North-South-South collaborations, funders should recognise the importance of language capacity in understanding the scientific needs of developing countries, as well as the larger issues of inter-cultural understanding. As an example, many clinical trials now take place in developing countries where community consent, rather than individual consent, is an issue.

14. The British Academy advocates an approach which follows the recommendations made in the *Nairobi Report* and in the forthcoming *Foundations for the Future* report, and which focuses on the support of research cultures through better governance, communities and networks, and a focus upon early-career researchers. As with the multiple levels of capacity building, these issues are fundamentally inter-connected and require even attention and a holistic view involving a number of linked forms of support:

- **Governance:** As argued in the *Nairobi Report*, “New money for research can only be provided if there is confidence in the ability of institutions to manage it and to deliver good research”. Structures, systems and governance all need to be coordinated to provide the best framework for supporting and developing research practices within institutions.

- **Communities and Networks:** South-South exchange and collaboration is essential to building self-sustaining communities of research excellence. Few institutions in developing countries have the capacity to support full programmes of research, and an approach which encourages the linking of existing capacity, and which makes use of institutional hubs as appropriate, is needed.
• Early-career Researchers: In many developing countries, an ageing professoriate, together with more attractive prospects for researchers overseas, has led to a shortage of capable researchers at the early career level. A concentration of support for the next generation of academics is critical, but as the Foundations for the Future report argues, “it is vital that these investments in people are designed to strengthen the wider research base in universities and their faculties and departments.” Support for the individual needs to be embedded within organisation frameworks, in order to begin to regenerate the ‘academic core’ of an institution.4

15. Through the International Partnership and Mobility scheme, the British Academy has designed a model for supporting research capacity development which seeks to address the issues raised above. By requiring organisational ownership from the partner developing country, the scheme aims to impact on organisational structures and systems for doing research. Intra-regional collaboration is integral to the scheme, as is the involvement of early career researchers. The scheme also gives valuable experience to British researchers in improving their understanding of research cultures overseas. Though modest in scale, the scheme has had demonstrable success in building capable, self-sustaining research teams, the majority of which have gone on to submit successful bids for funding on a far greater scale.

How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?

16. As capacity building is complex in its very nature, the monitoring and evaluation of its effectiveness is equally so. As a long-term endeavour, capacity building is unlikely to yield the short-term impact which best fits existing monitoring and evaluation (M&E) systems. Capacity building is not a “stable target”, and the M&E approach must be “flexible enough to adapt to all the changes inherent in CB, and must ensure that learning is captured”5. Recognising these difficulties, we welcome DFID’s efforts to develop appropriate M&E procedures and to conduct internal reviews of its capacity building record.

17. However, we believe that DFID should be more transparent in its evaluation methods, and should make greater efforts to make the results of its M&E known. It is our experience that there is a lack of awareness within the research community about what DFID is doing in this area, and greater transparency and communication would serve to redress this. Furthermore, the sharing of lessons learned - both success factors and, equally importantly, what has not worked – is beneficial for the research community, funders and intermediaries to build collectively on experience and improve future research capacity initiatives.

What role does DFID’s Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?

4 British Academy/ ACU, 2011, p.6

5 DFID, 2010 p.16
18. The role of DFID’s Chief Scientific Adviser (CSA) performs a vital function in ensuring ministers and policy-makers take decisions based on the best available evidence. While the current CSA comes from a natural sciences background we would highlight the need to take into consideration perspectives from the social sciences and humanities.

19. The British Academy welcomes the more integrated role for the CSA within DFID, which we believe has resulted in a greater contribution on his part in the development and assessment of capacity building policies. We commend the CSA’s regular meetings with ministers, and maintain the value of ensuring communication between the CSA and their Department.

20. However, we have found that there is again a lack of understanding within the research community about the role played by the Chief Scientific Adviser. We would recommend that the Chief Scientific Adviser develop a more transparent way of taking advice from UK academics working with researchers in the developing world, in order to fully benefit from the wealth of expertise available. As noted in our September submission to the House of Lords Select Committee on Science and Technology’s inquiry to investigate the role and function of departmental CSAs, the national academies are uniquely placed to support the development of greater understanding between CSAs and academics, and the British Academy is especially willing to play its part in supporting cross-disciplinary expertise to government that will supplement the expertise of the CSAs.

How are government activities co-ordinated with the private and voluntary sectors?

21. The co-ordination of the many capacity building activities across different sectors is crucial to creating greater impact and effectiveness. There is a wide range of different activity taking place at different levels, including the work undertaken by the national academies and learned societies.

22. The role played by organisations such as UKCDS (UK Collaborative on Development Sciences) in providing a forum for research funders in the UK with an interest in development to share information, and in organising events to develop more co-ordinated approaches, has been of great importance in this area. The British Academy has benefitted greatly from its involvement with the UKCDS’ Research Capacity Building Group. We welcome further opportunities for collaboration and sharing with UK Government on research capacity initiatives as we take forward the Nairobi Process.
Introduction

a. The UK Collaborative on Development Sciences was established in 2006 as a result of the Committee’s 2004 report *The Use of Science in UK development policy*. It brings together 13 key UK funders and stakeholders who provide support for research relevant to development:

- Biotechnology and Biological Sciences Research Council
- Economic and Social Research Council
- Engineering and Physical Sciences Research Council
- Medical Research Council
- Natural and Environment Research Council
- Department of Environment, Food and Rural Affairs
- Wellcome Trust

We work in partnership with the Bill and Melinda Gates Foundation

b. Our vision is that UK research funding has maximum impact on international development outcomes and we aim to encourage and facilitate working relationships for effective research for development.

c. This submission has been drafted by the UKCDS secretariat. It has not been officially approved by UKCDS members since the tight timescale has not made it possible to draft the submission and get approval from 13 organisations. Many of the members will be making their own submissions, but the secretariat decided to submit directly given its role in managing a Research Capacity Strengthening Group (see under Q 5) and the overview we have.

d. It should be noted that this response focuses on strengthening research capacity in low income countries. We recognise that innovation capacity and the capacity of Government and the private sector to utilise S&T is very important, but have not focussed on those areas in our work.
1. How does the UK Government support scientific capacity building in developing countries and how should it improve?

1.1. The UK Government supports the strengthening of scientific capacity in low income countries numerous ways. DFID is obviously the most active in this given its mandate and will provide the committee with details of the range of activities it supports.

1.2. DFID’s commitment to scientific capacity strengthening in low income countries has increased significantly since the Committee’s 2004 inquiry. We feel that DFID is constantly improving their activities and should be congratulated on the progress it has been making, in what is a very important part of the Research and Evidence Division’s remit. We hope that the increase in DFID’s budget over coming years (despite recent announcements that the rise will be less) will include increasing the resources that are invested in strengthening research capacity in low income countries.

1.3. However it is labelled, research and innovation capacity strengthening/ building/ development is complex and the terms themselves can be interpreted in numerous different ways and can cover a range of activities. One way to conceptualise capacity strengthening is as having three integrated and interrelated levels: the individual, the organisational and the enabling environment1.

• **Individual**: involving the development of researchers and teams via training and scholarships, to design and undertake research, write up and publish research findings, influence policy makers, etc.

• **Organisational**: developing the capacity of research departments in universities, research institutes, thinks tanks, etc, to fund, manage and sustain themselves and interact with society on a range of levels.

• **Enabling environment**: changing, over time, the ‘rules of the game’ and addressing the incentive structures, the political and the regulatory context and the resource base in which research is undertaken and used by policy makers, service providers and the private sector.

1.4. Since DFID’s submission will provide information on their own activities, we have highlighted a few examples of activities across Government categorised under these headings below.

1.5. Individual

   Commonwealth Scholarship Commission
   http://cscuk.dfid.gov.uk/
   The Commonwealth Scholarship Commission in the United Kingdom (CSC) is responsible for managing Britain’s contribution to the Commonwealth Scholarship and Fellowship Plan (CSFP), established in 1959, and supports around 700 awards annually. The Commission, which is funded by DFID, FCO, BIS and the Scottish Government supports studentships and fellowships – many of which are aimed at scholars from developing countries. Recently a large number of UK universities have agreed to provide joint scholarships, worth at least 20% of the tuition fee, to Commonwealth Scholars from developing countries. This extra revenue has enabled nearly 30 more Commonwealth Scholars to the UK this year. Many of the additional Scholars will be junior academic

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1 The terms and definitions have been adapted from DFID’s ‘How to’ note on capacity building in research
staff in developing country universities, whose studies in the UK will help develop
capacity in their home institutions.

Joint schemes with ESRC, MRC, BBSRC and NERC
There are number of joint DFID – Research Council schemes (detailed in the RCUK
submission) that are open to researchers from developing countries as Principle and Co-
Investigators. DFID and the Research Councils are looking at how they can maximise
the contribution these schemes make to capacity building – however the nature of the
scheme and that remit of the Research Councils means that capacity building will not be
a primary objective.

1.6. Organisational
DelPHE
http://www.britishcouncil.org/delphe.htm
DFID has invested up to £3 million a year in Development Partnerships in Higher
Education (DelPHE). The programme provides funding to support partnerships between
Higher Education Institutions (HEIs) working on collaborative activity linked to the UN
Millennium Development Goals (MDGs). The overall goal is to enable HEIs to act as
catalysts for poverty reduction and sustainable development. DelPHE aims to achieve
this by building and strengthening the capacity of HEIs to contribute towards the MDGs
and promote science and technology related knowledge and skills. The programme runs
for a seven year period from June 2006 to March 2013.

Darwin initiative
http://darwin.defra.gov.uk/
The Darwin Initiative, funded by Defra, assists countries that are rich in biodiversity but
poor in financial resources to meet their objectives under one or more of the three major
biodiversity Conventions2 through the funding of collaborative projects which draw on
UK biodiversity expertise.
Darwin projects are diverse. Typically, they may address issues in the following areas:

- institutional capacity building
- training
- research
- work to implement the Biodiversity Convention
- environmental education or awareness

1.7. Enabling environment
The Wellcome Trust is working with DFID and the IDRC to enhance the capacity for new
health research in Kenya and Malawi. The Health Research Capacity Strengthening
(HRCS) initiative aims to strengthen the capacity for generating new health research
knowledge within Kenya and Malawi, and to improve its use in evidence-based decision
making, policy formulation and implementation. This will be achieved by strengthening
key academic research and health policy-making institutions, and facilitating the
collaborative engagement of national representatives. The Wellcome Trust and DFID
committed £10 million each towards health research capacity strengthening in Africa.
The International Development Research Centre, Canada (IDRC) joined the initiative as

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1 the Convention on Biological Diversity (CBD); the Convention on International Trade in Endangered Species of
Wild Flora and Fauna (CITES); and the Convention on the Conservation of Migratory Species of Wild Animals
(CMS)
an implementing partner with experience in health research programmes in East Africa, and as a funder.

1.8. There is (inevitably) always more than can be done to improve the Government’s approach – but this needs to be balanced against other priorities. For example, for DFID to improve its support to organisational capacity and the enabling environment for science and innovation in low income countries it would need to build its own capacity to do this. This would require investment in recruiting and developing appropriate staff. Capacity strengthening is complex and long-term and requires significant support as well as funding, this includes staff that have and an understanding of the global science community as well as the skills to develop an organisation in areas other than in science (HR, finance, etc.) and the ability to negotiate challenging social and political contexts within and organisation and a country. Although some of this does not need to be managed directly by DFID it still must have the capacity to manage such programmes. This is in conflict with the Government’s priority to reduce size of the civil service.

2. What are the most effective models and mechanisms for supporting research capacity in developing countries?

2.1 There is not one model or mechanism that has been shown to be the most effective at supporting research capacity development. There is a lack of systematic evidence around capacity strengthening processes; but also, as capacity strengthening is very complex and often context dependant, it is appropriate that a diverse range of approaches is taken.

2.2 The type of model or mechanism used can also depend on the intention behind the scheme. For example, the schemes managed by the British Council on behalf of the Department of Business Innovation and Skills (England-Africa Partnerships which has become Education Partnerships in Africa), have been aimed at developing institution capacity of higher education institutions in Africa, but also at developing and building on links between British and African institutions – therefore a scheme focussed on the institutions in Africa alone would not achieve one of the key objectives.

2.3 The main objectives of any initiative will help determine the most appropriate model – for example the primary aim may be to conduct excellent research and in the process develop capacity. Whilst doing high quality research is by no means separate from capacity building, the main focus and way in which a programmes outcome are evaluated are likely to influence how much effort is focussed on different activities. Capacity strengthening is likely to be most successful when it is the primary objective of a programme rather than a secondary requirement.

2.4 The UKCDS secretariat recently organised a workshop Research capacity strengthening: Learning from experience for UKCDS members, members of the research capacity strengthening group (see q 5) and others. The workshop considered lessons learnt from different schemes aimed at supporting individuals and research careers, organisational capacity and the enabling environment.
2.5 The workshop discussed a range of models and mechanisms. For example, within those programmes aimed at organisational (sometimes called institutional) capacity strengthening there are programmes that
- support North-South institutional partnerships (e.g. Royal Society Leverhulme Ghana- Tanzania Award³)
- develop Southern-led consortia (e.g. Wellcome Trust African Institutions Initiative⁴)
- focus on providing targeted support to specific organisations/universities (SIDA’s work with Makerere University⁵)
- develop centres of excellence (e.g. Next Einstein Initiative⁶)

2.6 It is not yet clear that any of these models is more effective than the others, but it is clear that certain principles should be adhered be to when developing and supporting these programmes to have increase the likelihood that they are effective. These include:

- **Building on existing capacity** – it is important to existing local capacity where possible and enabling local actors to undertake an assessment of their strengths and weaknesses and work in partnership to identify needs and gaps, rather than ignoring what exists or duplicating efforts.

- **Long term commitment and persistence** – Capacity strengthening is not easy and not something that can be wrapped up in a year. To seriously improve capacity in the long-terms requires a recognition that it can be high risk and is likely to suffer setbacks along the way. There are many factors that can affect a programme (political changes; social limitations; changing personnel; historical context, etc) and it need to be recognised that it is likely these will cause difficulties along the way.

- **A considered approach to sustainability** – Over the last few decades there have been numerous programmes aimed at developing capacity in a wide range of areas, including S&T. Unfortunately programmes can fail to leave much of a long-term impact once funding for the programme has ceased. Those involved in developing such programmes need to seriously consider, what will happen when funding is concluded and what plans can be put in place to enable a transition to a model which does not include being dependant on the donor/funder. Obviously research often requires a certain amount of funding ‘external’ to the organisation and often sustainability is considered in terms of whether the individual or organisation can continue to win funding from other donors. This is only part of the picture – it should be the aim of any programme focussed on an individual, team or organisation to develop them to be able to adapt and survive in a changing environment (part of which means able to win funding competitively from a range of sources), but it can also mean stimulating the local environment to continue to enable the person, team or organisation to thrive (e.g. providing an individual with PhD training for them to return to a department with no career support and no resources can be very limiting for that individual).

- **Local ownership** – It has long been known that for development interventions to be successful a degree of local ownership is required. Identifying and enabling local ownership is not easy and there may be a range of groups who could (and may be should) be engaged. The important thing is that the programme is not imposed on

³ http://royalsociety.org/grants/schemes/leverhulme-africa/
⁴ http://www.wellcome.ac.uk/Funding/International/WTX055734.htm
⁵ http://www.scidev.net/en/features/makerere-university-rebuilding-a-reputation.html
⁶ http://www.nexteinstein.org/
the ‘beneficiaries’ and that they have a strong say in the aims of the programme and how to get there.

- **Avoiding using parallel processes** - Where possible, it is important to try and strengthen local capabilities and mechanisms across all aspects of the programme. For example, directly funding African institutions (rather than sub-contracting through UK institutions) can help strengthen financial management in an institution. However, this can require time and support and can increase the scope of a programme.

3. **How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?**

3.1 Monitoring and evaluation research capacity strengthening activities is very difficult. The UKCDS secretariat organised a workshop in May 2009 on *Monitoring and evaluating capacity strengthening initiatives – defining the questions, considering approaches*. This helped stakeholders involved in funding and managing capacity building activities to work through what they need to consider in developing their evaluations. Some of the main conclusions include:

- Developing a clear understanding of the change that an organisation or programme is hoping to contribute to, and the assumptions associated with this, will enable better design, execution of activities, and evaluation.
- The vision of success for a programme represents the world view(s) of those who designed it. Involving groups at whom the programme is targeted at in developing and expressing the theory of change could improve the chances that the programme will support outcomes that are meaningful to those groups.
- The question of *why are you evaluating and who is the evaluation for* are fundamental questions that need to be addressed before designing an evaluation, (and preferably before designing a programme). Are you evaluating for accountability, to learn lessons for future, or to decide on future funding?
- Funders and programme managers need to be accountable, particularly when taxpayers money is involved. However, if the purpose of the programme is to support and strengthen ‘local’ capacity, then determining if the capacity strengthening is meaningful to the actors whose capacity is being supported should be a significant part of the evaluation.
- The imperative to demonstrate impact to funders or governing boards can result in a focus on success stories, neglecting the useful lessons that can be learn from failure.

3.2 It is crucial that there is capacity and political will within organisations to implement the lessons from evaluations or else there is limited utility in undertaking them. Encouragingly there seems to be, more than ever, an appetite within DFID for learning lessons from evaluations.

3.3 DFID, like many other funders, is continuing to develop its approach to monitoring and evaluating capacity strengthening activities. The complex nature of the initiatives and the range of approaches that are taken mean that there is unlikely to a simple template that can be applied to all activities. However, recent work is providing more support in this

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7 [http://tinyurl.com/d2od37z](http://tinyurl.com/d2od37z)
area. For example, ESSENCE, a group of international health research funders (including DFID and Wellcome Trust) involved in developing capacity in low income countries, have recently published *Planning, Monitoring and Evaluation Framework for Capacity Strengthening in Health Research*[^8].

3.4 Some funders have not made the evaluations of their programme publically available in the past. We would urge all funders to make their evaluations available so that everyone can learn from them. The Wellcome Trust has commissioned a significant learning and evaluation component as part of their African Institutions Initiative and this specifically highlights the need for the evaluation to identify and share lessons about capacity strengthening with other funders; something which we strongly support.

4. **What role does DFID Chief Scientific Adviser plays in determining priorities and in the development and assessment of capacity building priorities?**

4.1 The current DFID CSA has been instrumental in improving DFID’s approach to the funding and use of science and innovation over recent years. The CSA should play an important role in ensuring that capacity strengthening is a priority for RED and in articulating its importance, as well as its long-term and complex nature.

5. **How are government activities co-ordinated with the private and voluntary sector?**

5.1 The coordination of capacity strengthening is vital; whilst recognising that a diversity of approaches is required. Different stakeholders can bring different strengths to activities. For example, Learned Societies can work with scientists in their own country and low income countries in a bottom up, small scale approach – addressing particular niche needs and testing different approaches; whereas bilateral funders such as DFID can implement larger schemes and work more closely with other Governments.

5.2 It is difficult to completely coordinate every capacity strengthening initiative across all ‘donor’ countries. However, moves to improve information sharing and lesson learning can be a step towards ensuring better coordination. UKCDS was established to improve communication and coordination between research funders in the UK with an interest in development. It manages a ‘Research Capacity Strengthening Group’ which brings together UK stakeholders who have some interest or involvement in strengthening research capacity in low income countries. Members include:

- Association of Commonwealth Universities
- The British Academy
- The British Council
- CAAST-Net – an EU African International Cooperation Network led by the UK
- Department for International Development
- Economic and Social Research Council
- International Network for the Availability of Scientific Publications (INASP)
- Medical Research Council
- Research Councils UK
- The Royal Academy of Engineering

[^8]: http://tinyurl.com/cet9637
The aim of the group is to develop a better understanding and relationship between UK stakeholders and to encourage coordination of and collaboration on capacity strengthening issues.

5.3 A similar initiative on an international level is ESSENCE (as mentioned above)\(^9\) which is focussed on health research capacity strengthening. This group is making important progress on improving coordination amongst funders at an international level.

5.4 Coordination, however, should ideally come from the institutions and actors within low income countries so that they have maximum input into what different funders can help them with or work together on, based on their needs. For example, Makerere University has been attempting to do this, led by their research and publications department. However, organisations do not always have the capacity to do this.

UKCDS

16 December 2011

\(^9\) Further details can be found here: [http://www.ukcds.org.uk/page-Capacity_strengthening-60.html](http://www.ukcds.org.uk/page-Capacity_strengthening-60.html)

\(^10\) [http://apps.who.int/tdr/svc/partnerships/initiatives/essence](http://apps.who.int/tdr/svc/partnerships/initiatives/essence)
The UCL Institute for Global Health (IGH) is pleased to make a submission to the Committee’s inquiry into Science and International Development.

IGH is developing an institution-wide agenda leading to strategies, programmes, research and teaching to bring UCL’s combined expertise to bear on global health challenges. The Institute coordinates the cross-fertilisation and application of UCL’s expertise to problems of global health.

IGH’s experience with regard to the UK Government’s activity in science and development is largely with DFID and for that reason our response concentrates mainly on DFID’s policy and activity.

1. How does the UK Government support scientific capacity building in developing countries and how should it improve?

We would contend firstly that Government should improve its definition of what is meant by capacity building in regard to scientific research. We suggest that scientific capacity developing includes: the development of sustainable infrastructure within a country (i.e. sustainable either within the resources of the country or through income generation); the training of scientists to become discipline leaders and senior managers of global standing; and the establishment of self-sustaining networks of indigenous scientists to deliver research and train appropriate cohorts.

The aim of capacity building should ultimately be to develop sustainable and mutually beneficial partnerships between developed and developing countries. It is also important for scientific research to include a component which focuses on implementation to develop a clear understanding of how to improve the influence of research evidence on policies and programmes.

It is not clear that the UK Government overall has scientific capacity building as a key aim. Being more explicit across Government about aims with regard to capacity building would be helpful. In particular, we would advocate a clear statement that Government wishes to support scientific capacity building where appropriate, and the inclusion of capacity building as an outcome in relevant research calls by Government departments.

There may also an important role for the Science and Innovation Network in identifying priority areas for capacity building.

2. What are the most effective models and mechanisms for supporting research capacity in developing countries?

There is a key role for DFID in gathering and disseminating evidence on the most effective models and mechanisms for supporting capacity building, and this should be prioritized within DFID research activity. We suggest that DFID research applications should include an explicit statement of how capacity development will delivered, with grant-holders held accountable for this.
DFID has an important role in improving the leadership and capacity of researchers so they can design and deliver appropriate research. Based on the definition of scientific capacity building that we have set out above, we would suggest that DFID should ensure a clear understanding of this and of DFID’s priorities for capacity building among researchers in both developed and developing countries. There should be a clear focus on building skills, human resources and intellectual capacity.

As we argued in our submission to the Government Office for Science’s Science and Engineering Assurance Review of DFID in early 2011, we do not believe that DFID’s Research Programme Consortia model has worked successfully. We make a number of suggestions for priorities that should be embedded in capacity building programmes:

- training the workforce and researchers in developing countries to develop human capacity;
- funding research grants for at least 5 years (recognising that outcomes may be incremental or iterative and will take time to emerge);
- supporting full research costs through grants;
- establishing a research funding stream to improve lab capacity in research institutions in developing countries.

We would suggest that a preferred model of research funding for capacity building would be to issue frequent calls for research in defined areas on a rolling basis which are specific in overall outcomes but leave the design and delivery to the researchers involved. These should support effective partnership research mechanisms between UK and developing country researchers and thus embed capacity building and mutual learning. Alternatively, DFID could seek to build research capacity by supporting multi-country, and ideally cross-regional, research so that countries learn from each other, although we recognise that there may be a challenge in managing such research effectively. A successful example of this model is the projects funded by the European and Developing Countries Clinical Trials Partnership (EDCTP), which uses a brokered approach to bring together complex consortia, comprising groups which previously would have competed against each other for funds, to address clear research aims.

We would also suggest that DFID should explore new ways of supporting universities in developing countries to undertake research, as this is one of the most effective methods of capacity building. Currently universities in developing countries are often peripheral to capacity building efforts because they are more focused on the practical training of researchers than on undertaking research. We noted in our submission to Science and Engineering Assurance Review of DFID that:

There is a need to support research institutions, particularly universities in developing countries, to manage and deliver robust, relevant and high quality evidence. DFID Research Consortia should be expected to have partners with a strong track record of research generation and capacity building in research methods and training. We are fully supportive of DFID’s emphasis on the need to build research capacity in our developing country research partnerships, to strengthen capacity to do and use research at the individual, organisational and institutional level.

Finally, we note that there is a continued tension between developing and delivering successful capacity building programmes, and the pressure from DFID to deliver rapid outcomes and good news stories. We would suggest that having appropriate evaluative goals for successful research capacity building, that recognise that it is
likely to occur over the longer-term and in increments, could help to resolve this tension.

3. How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?

Our response here refers to DFID’s monitoring and evaluation of research, rather than that of the Government as a whole. There is significant scope to improve the level of interaction between DFID-funded research programmes and DFID staff. There appears to be little time or resource invested in responding to research reports or engaging with what is being learnt through research. Furthermore, there appears to be a disconnect between the DFID staff who commission research, DFID’s technical advisors in the UK and in country offices, and the scientists working on DFID-funded research. This disconnect is likely to impede DFID’s monitoring and evaluation of the research and capacity building that it supports.

4. What role does DFID’s Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?

We feel that there is very little visible role for DFID’s Chief Scientific Adviser (CSA). We would suggest that it would be helpful if the CSA could liaise with research advisers in DFID to identify needs in capacity building in order to inform funding and DFID’s other work in capacity building.

We feel that DFID’s articulation of capacity building remains vague. Although definitions are provided in a guidance note issued by DFID\(^1\), there is no clear vision of what this means in terms of implementation. We would suggest that developing guidance on implementation to include practical examples of what works and what is feasible in developing country contexts would be highly valuable.

DFID should also seek to better disseminate its guidance on capacity building; there may be a role of the CSA here. Finally, we would suggest that it is important that the CSA interacts closely with the DFID Head of Research; such appointments should not be seconded positions, which may potentially impede activities due to conflict of interest concerns, to ensure that post-holders can fully participate in DFID procedures.

5. How are government activities co-ordinated with the private and voluntary sectors?

We feel that DFID’s coordination with trusts and endowment organisations seems to be successful and that this should be continued.

We emphasise that DFID has a respected and helpful role in advocating independent views and in demonstrating leadership on particular issues (such as family planning and safe abortion) and it is important that DFID continues this role.

We would suggest that it would be useful for DFID to work with NGOs to promote scientific good practice in NGO research and in particular to ensure that research

\(^1\)http://www.dfid.gov.uk/r4d/PDF/Publications/GuidanceNote_CapacityBuilding.pdf
results are published in peer-reviewed journals whenever possible to ensure a rigorous evidence chain that can in turn inform future research.

UCL Institute for Global Health

December 2011
Written evidence submitted by International AIDS Vaccine Initiative (Int Dev 24)

About IAVI
IAVI is a global not-for-profit, public-private partnership, with offices in the United States, Africa, India and Europe. Our mission is to ensure the development of preventive AIDS vaccines that are not only safe and effective, but also accessible to all people. To that end, IAVI invests the bulk of its resources in the research and clinical assessment of candidate vaccines against strains of HIV that are prevalent in the developing world, where some 95% of new HIV infections occur.

IAVI’s operational strategy is predicated on the conviction that addressing HIV/AIDS and developing a preventive vaccine will require the contributions of researchers worldwide, and especially from countries most burdened by the epidemic. IAVI is also guided by the belief that local scientific and technological capacity is critical to the sustainability not only of the global AIDS vaccine effort but of development efforts in general, since such capacity is what underpins innovation. Investing in capacity building in the context of AIDS vaccine research can have benefits that reach far beyond ending HIV/AIDS.

Our research and product development teams work with more than 40 academic, commercial and government institutions to develop and evaluate candidate HIV vaccines. So far, IAVI and its partners have designed 21 AIDS vaccine candidates, and already evaluated 12 of these in early stage human trials in Asia, Africa, Europe and North America. To do this critical work, we, together with local research institutions, have developed a network of sophisticated laboratories and clinics, including in India and in southern and eastern Africa. Our Human Immunobiology Laboratory at Imperial College London is a central hub that co-ordinates the work of the laboratories engaged in informing the design of novel vaccine candidates and in evaluating their ability to prevent HIV infection and AIDS. IAVI also conducts policy and advocacy programmes to help advance AIDS vaccine R&D worldwide, and supports a comprehensive approach to HIV and AIDS that balances the expansion and strengthening of existing HIV prevention and treatment programmes with targeted investments in research for new HIV/AIDS prevention tools.

Written submission
We wish to restrict our written submission to questions 1 and 2 as they relate to AIDS vaccines and the committee inquiry regarding scientific capacity in developing countries.

Question 1:
How does the UK Government support scientific capacity building in developing countries and how should it improve?

The UK is a strong supporter of R&D for AIDS vaccines, both in terms of investments made through DFID’s research strategy and by public and private institutions in the UK research field more broadly. The UK government has, quite rightly, taken a long-term view and has demonstrated commitment in its portfolio approach to R&D investments, including by
funding IAVI. Strong and sustained leadership of this kind is required if we are to eliminate AIDS. The need to sustain this commitment cannot be overemphasised when faced with an unsustainable and growing treatment bill as global HIV incidence remains high and the population of people living with HIV, and hence our pool of infection, grows. IAVI praises UK leadership in the global arena. The UK is globally the 3rd largest investor in R&D for AIDS vaccines, and in Europe the largest single national investor. Funding from DFID has made a major contribution to supporting IAVI’s efforts to build and maintain scientific capacity in developing countries in the following ways:

1. Build strong networks of clinical trial sites;
2. Foster national research partnerships;
3. Develop a centre of excellence in London to equip, monitor and train scientists in developing countries to conduct clinical trials; and
4. Establish vaccine preparedness programmes

1. **Building strong networks of clinical trial sites**

   Since its inception, IAVI has made engagement with developing countries a priority in its approach. To ensure that a future AIDS vaccine would be effective and accessible by people in countries hardest hit by HIV/AIDS, IAVI made a deliberate choice to engage researchers, governments and communities in these countries from the start. The value this would bring to building sustainable capacity and expertise amongst these stakeholders was a particular incentive for this approach.

   The first step was to build the capacity to conduct clinical trials in developing countries, where most of those studies would take place. Since 1998, IAVI has built a network of clinical trial research centres in southern and eastern Africa. IAVI conducted its first clinical trial of a candidate vaccine in collaboration with the Kenya AIDS Vaccine Initiative (KAVI) and the United Kingdom’s Medical Research Council.

**IAVI’s approach:**

To achieve the scale necessary to conduct Phase I clinical trials in the developing world, IAVI engaged with local research institutes and supported the building of a network of clinical trial sites for testing HIV vaccine candidates to the highest standards of medical science, safety, and ethics. The network of state-of-the-art laboratories and research and health services staff were equipped and trained to process, test, and store tens of thousands of blood samples, and possess the infrastructure for transportation and communication.

2. **National research partnerships**

   IAVI formed partnerships with governments in Uganda, India, Kenya, Rwanda, South Africa and Zambia to establish and foster national research partnerships. IAVI also sought out the best national scientists, technicians, public health professionals and community outreach workers to join its country project teams.
3. Develop a centre of excellence to support clinical trials in developing countries
Key to supporting the clinical trial network was the establishment of IAVI’s Human Core Immunology Laboratory (HIL) in London, in collaboration with Imperial College London and housed at the Chelsea and Westminster Hospital, to train and equip clinical trial sites as well as to help coordinate trials conducted in each country. The HIL helps to train staff at the network’s collaborating research centres (CRCs) and to standardise methods and reagents for research, according to international Good Clinical Laboratory Practice (GCLP) guidelines that the HIL helped develop - and ensuring that data generated by labs supported by IAVI are comparable at all times. Today, all IAVI research labs supporting clinical trials have achieved the international standards of GCLP.

4. Establish vaccine preparedness programmes
Pioneering a sustainable network of clinical trial sites in the developing world also required a strong local presence and a foundation of trust between research partners, host country governments, media, and communities. IAVI introduced a vaccine preparedness programme to increase awareness, understanding, and national involvement in HIV vaccine clinical trials, and has included setting up community advisory boards to enhance recruitment and improve voluntary counselling and testing and other HIV/AIDS health services. The goal was to prepare for trials of experimental HIV vaccines, both IAVI-sponsored candidates and products developed by other organisations, to ensure support by governments and communities alike, and develop greater ownership of the research by those engaged in it.

Today, the network of IAVI-supported research centres powers IAVI’s vaccine development programme. Our approach emphasises building local capacity by training local researchers and developing the infrastructure required to conduct vaccine trials, and clinical HIV studies that describe the epidemic and lay the groundwork for future vaccine efficacy trials.

Threats posed by funding cuts
Sustaining the gains IAVI has seeded in the developing countries in which it operates requires sustained investment. The on-going global economic crisis has inevitably led governments and other funding entities to review, and in many cases, cut their funding. In 2010 global investments in HIV/AIDS R&D fell for the second year running, down 5.9% from 2009. ¹ IAVI too has seen a decline in its income since the onset of the global economic crisis in 2008.

For 15 years IAVI has worked tirelessly with support from donors like DFID, to build a strong cadre of scientific personnel who have access to the latest equipment, research and support

to maintain internationally recognised standards of research practice in developing country settings. Any cuts to funding threatens to undermine many of the gains we have made in building scientific research capacity in developing countries.

When faced with funding shortfalls, research organisations like IAVI have to make tough decisions about sustaining the overall operation to ensure we remain true to our mission. IAVI aims to maintain its various clinical trial sites around the world to test AIDS vaccine candidates as they move through our pipeline. However, cuts to IAVI’s funding remain a significant threat to undermining scientific capacity in developing country settings.

IAVI is currently in receipt of a multi-year grant from DFID which comes to an end in 2012. This grant has been enormously beneficial in helping IAVI in its mission and, as outlined above, in building and strengthening scientific capacity in developing country settings. As we enter 2012, IAVI working hand-in-glove with DFID hopes to agree and sign a further multi-year grant that will allow us to sustain the investments made thus far in building scientific capacity.

**Question 2:**
**What are the most effective models and mechanisms for supporting research capacity in developing countries?**

Product Development Partnerships (PDPs) are a class of not-for-profit organisations focused on developing new products to meet health challenges in the developing world and bringing them to market as quickly as possible. PDPs are currently developing new technologies to diagnose, treat and prevent a range of diseases which impact seriously on the health and livelihoods of people living in low- and middle-income countries.

Although PDPs vary in terms of their focus and approach, all PDPs realise their mission by co-ordinating the contributions of the private, public and not-for-profit sectors. PDPs work with others to engage and direct the public and private sectors to address the scientific, economic, legal and political challenges that exist in developing new health technologies for use in developing countries and ensuring rapid and widespread access and use.

PDPs such as IAVI play a key role in accelerating R&D for new health technologies. In 2009, PDPs had nearly 150 biopharmaceutical, diagnostic and vector-control candidates in various stages of development, including 32 in late-stage clinical trials. The recent evaluation carried out by the Government of The Netherlands and the World Health Organisation’s action plan on innovation in health care confirmed the high impact of PDPs on developing countries and argued that PDPs provide an “optimal funding allocation at all stages of research and development, in a manner best designed to maximise public health returns in the developing world.”

IAVI is unwavering in its dedication to ensuring the development of an AIDS vaccine suitable for use in developing countries where AIDS has taken the greatest toll. Further, clinical capacity-building efforts provide near-term ancillary benefits with far-reaching
consequences, contributing to economic growth and poverty reduction by strengthening partner countries’ technical and human ability to formulate, implement, and lead research strategies, integrating local researchers into global knowledge networks, and strengthening national legal, regulatory, and policy systems.

Capacity-building in developing countries is integral to the work of PDPs. PDPs collaborate with developing country partners to advance candidates in the R&D pipeline and invest significant resources in partner countries to support and expand existing physical and systemic infrastructures in the communities in which they operate. A few examples of PDP support for scientific capacity-building include:

- diversifying economies
- enhancing local firm’s abilities to compete globally
- enhancing knowledge-generating institutions’ abilities to conduct science and develop new technologies and adapt existing ones
- creating jobs, and
- strengthening governments’ abilities to use science in policymaking.

Additionally PDPs such as IAVI with the ultimate goal of developing and increasing access to health technologies and improving public health play a unique role in strengthening developing countries’ scientific capacities by:

- linking developing countries to international knowledge networks
  - IAVI Neutralizing Antibody Consortium
  - DNDi Leishmaniasis East Africa Platform

- building health research infrastructure
  - Examples of IAVI’s clinical research partners include: Kenya AIDS Vaccine Initiative (KAVI), and the Uganda Virus Research Institute (UVRI). For example, UVRI’s HIV Vaccine Programme consists of state-of-the-art laboratories, clinical space and administrative offices. It was the first programme in sub-Saharan Africa to receive GCLP accreditation and was selected in 2005 to be a central laboratory in the Consortium for AIDS Vaccine Development.
  - DNDi Leishmaniasis Research and Treatment Centre in Ethiopia - Africa’s first clinical research facility dedicated to visceral leishmaniasis
  - Medicine for Malaria Venture (MMV) improved R&D capacity and capabilities in 39 of 55 research centres in over 24 malaria-endemic countries
  - Foundation for Innovative New Diagnostics (FIND) has been working with the Lesotho Ministry of Health to upgrade the national TB reference laboratory

- Increasing health research human resources
  - IAVI, MMV, TB Alliance, DNDi all invest in Good Clinical Laboratory Practice (GCLP) accreditation of laboratory workers at their clinical research centres to ensure compliance with international standards
• Strengthening the evidence-base to inform policymaking
  o MVI is currently working with WHO and African countries to establish decision-making processes around vaccine use
  o IAVI works with developing country partners to mathematically model the potential impact of an AIDS vaccine and conduct analysis of their biopharmaceutical innovation systems

Yet PDPs like IAVI are facing funding cuts. In the most recent G-Finder report (a report that tracks investments in R&D for neglected diseases), it is worth noting that PDPs collectively saw funding cuts of US$ 47 million in 2010. This is a worrying trend that threatens the development of new products to combat neglected diseases.²

² http://www.policycures.org/downloads/g-finder%20summary%202011.pdf
### Appendix I:
Potential issues in AIDS vaccines Research studies and lessons learned (IAVI Policy Research Paper #6)

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<tr>
<th>POTENTIAL ISSUES</th>
<th>KEY LESSONS</th>
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<tr>
<td><strong>COMMUNITY</strong></td>
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<tr>
<td>Need to ensure that broader community understands and supports the vaccine study</td>
<td>• It is essential to have an overall strategy for communicating with the</td>
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<td>study community, beginning well in advance of study implementation and</td>
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<td>continuing throughout the duration</td>
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<td>• It is critical to work with a broad range of stakeholder groups, whether</td>
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<td>through CABs or other mechanisms</td>
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<td></td>
<td>• Clinical staff should collaborate with public health personnel, social</td>
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<td>scientists, and community liaisons to ensure appropriate and adequate</td>
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<td></td>
<td>communication</td>
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<td>Myths and rumors often arise, and expectations about study outcomes and availability of a vaccine are frequently not realistic</td>
<td>• To address such problems research personnel must have a communications</td>
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<td>strategy in place before the study begins, and should proactively deal</td>
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<td>with them through the CABs and community engagement</td>
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<td>• Research teams also need to work with the media, early and often, to ensure</td>
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<td>that appropriate and accurate messages are disseminated</td>
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<td>• Messages about the study should provide a realistic picture of what the</td>
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<td>outcomes would be and the timeline for a vaccine to become available</td>
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<td>Vaccine studies can have an important impact on health care services within the community</td>
<td>• The health education and AIDS awareness that result from vaccine studies</td>
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<td>are felt to be significant; it might be useful to undertake social</td>
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<td>research studies to measure this impact</td>
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<td></td>
<td>• Integrating vaccine study activities with ongoing healthcare programs/</td>
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<td>activities may enable important synergies, not only in terms of raised</td>
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<td>levels of awareness, but also in terms of greater utilization of STI</td>
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<td>clinics, reproductive health services, and other programs</td>
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<td><strong>HOST COUNTRIES / NATIONAL INSTITUTIONS</strong></td>
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<td>Capacity building for regulatory and related authorities is needed</td>
<td>• Undertaking vaccine studies requires and has often led to the strengthening</td>
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<td>of capacity to review protocols, study designs, and research activities;</td>
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<td>this is predicated upon a commitment from host countries to invest in</td>
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<td>these capabilities, but also translates into greater ability to oversee</td>
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<td>other research efforts</td>
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<td>Countries should build access provisions into their agreements in undertaking</td>
<td>• Governments can and should work with sponsors and manufacturers at very</td>
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<td>vaccine studies</td>
<td>early stages to ensure that adequate provisions are made for access to</td>
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<td>a vaccine that proves safe and effective</td>
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<td>• Such negotiations with sponsors should also include specific provisions</td>
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<td>for treatment and care for those participating in the vaccine studies</td>
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# POTENTIAL ISSUES

## PARTICIPANTS

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<th>Potential Issue</th>
<th>Key Lessons</th>
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| Stigma and discrimination are sometimes encountered by participants | - Locate studies in multi function sites and facilities  
- Study staff should work proactively with volunteers on how to disclose their participation  
- Study staff should have plans/documentation in place for participants who test false positive due to the vaccine, and be prepared to intervene on behalf of volunteers |
| Trial success depends on the willingness and ability of volunteers to continue participating | - To improve retention, establish convenient hours and comfortable surroundings for volunteers to make follow-up visits  
- In addition to many other stakeholder groups in the community at large, research teams may need to work with volunteers’ employers to ensure that there is buy-in and understanding of the vaccine study from that group as well |

## RESEARCH STAFF

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<tr>
<th>Potential Issue</th>
<th>Key Lessons</th>
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| Skills development and career experience may require strengthening and longer-term planning | - While global R&D efforts and protocols must adhere to strict standards and maintain consistency, local research teams must also be able to provide substantive input at early stages, and be truly involved in decision making throughout the study  
- Career opportunities for research personnel are generally positive, but making long-term commitments to trials may restrict growth and mobility; staff retention efforts should consider reasonable salary levels, long-term career development, and possible rotation of staff (including PIs)  
- Clinical staff have underscored the benefits of collaborating with social science and public health colleagues, particularly in developing communications strategies to work with participants and communities; such efforts have had positive impacts on the studies themselves (recruitment, retention) and should be consistently undertaken |
| Workload problems encountered by study personnel | - To avoid overworking personnel in public health facilities, vaccine studies need to carefully evaluate human resource needs, and probably rely on project staff to a large extent  
- It is important that such efforts do not skew local salary structures and that studies minimize departures from public health positions |
| Vaccine studies are tied to grant funding, and staff positions may not be sustainable when funding ends | - Study sponsors and research institutes should seek ways to even out funding over time to avoid gaps when studies end; this may include diversifying into other types of trials  
- National governments should consider investments to maintain research sites and capabilities, as a supplement to external funds, and to ensure that established capacity can be maintained consistently |

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1. IAVI’s Neutralizing Antibody Consortium (NAC) was formed in 2002 as a pioneering effort to launch the first large-scale collaborative research effort to address a fundamental hurdle in HIV vaccine design: how to elicit antibodies that neutralize a broad range of HIV strains.  
2. The overall aim of the platform is to strengthen clinical research capacity, which is lacking in part due to the remoteness and geographic spread of the patients, most of whom live in the most impoverished regions of Africa.  
3. In Kenya, IAVI is partnering with the University of Nairobi and Kenya AIDS Vaccine.
Initiative (KAVI). In Uganda, IAVI is partnering with the Uganda Virus Research Institute (UVRI) under an agreement with the Government of Uganda signed in August 2001.

International AIDS Vaccine Initiative

16 December 2011
Written evidence submitted by Research Councils UK (Int Dev 25)

Introduction

1. Research Councils UK is a strategic partnership set up to champion research supported by the seven UK Research Councils. RCUK was established in 2002 to enable the Councils to work together more effectively to enhance the overall impact and effectiveness of their research, training and innovation activities, contributing to the delivery of the Government’s objectives for science and innovation. Further details are available at www.rcuk.ac.uk.

2. This evidence is submitted by RCUK and represents its independent views. It does not include, or necessarily reflect the views of the Knowledge and Innovation Group in the Department for Business, Innovation and Skills (BIS). The submission is made on behalf of the following Councils:

   Arts and Humanities Research Council (AHRC)
   Biotechnology and Biological Sciences Research Council (BBSRC)
   Engineering and Physical Sciences Research Council (EPSRC)
   Economic and Social Research Council (ESRC)
   Medical Research Council (MRC)
   Natural Environment Research Council (NERC)
   Science and Technology Facilities Council (STFC)

3. RCUK notes that this inquiry is a follow up to the Science and Technology Select Committee’s 2004 report into ‘The Use of Science in UK International Development Policy’. Given that this report contained some recommendations for the UK Research Councils, RCUK believed that a submission on the inquiry would provide the committee with an update on progress made since the report. This notably includes the establishment of UK Collaboration for Development Science (UKCDS) in 2006 as a direct response to the conclusions contained in the 2004 report. RCUK notes that UKCDS have also submitted evidence to this inquiry.

How does the UK Government support scientific capacity building in developing countries and how should it improve?

4. RCUK supports capacity building in developing countries via cross-Council and Council-specific research programmes often in partnership with DFID, by investments in international research facilities and through support for collaborative schemes.

Cross-Council working

5. Ecosystem Services for Poverty Alleviation (ESPA) is a multi-disciplinary, £40.5M research programme involving NERC, ESRC and DFID. ESPA aims to deliver high quality and cutting-edge research that will develop improved understanding of how ecosystems function, the services they provide, the full value of these services, and their potential role in achieving sustainable poverty reduction. ESPA research will provide the evidence and tools to enable decision makers and end users to manage ecosystems sustainably and in a way that contributes to poverty reduction.

6. Part of the impact of the ESPA programme will be capacity building of people and institutions in developing countries. There are two main themes for capacity strengthening in ESPA: (1) providing developing country researchers with the skills to undertake interdisciplinary research and (2) supporting the application of research to inform development practice. Applications led by and involving researchers in developing countries and collaborations between UK and overseas are encouraged, alongside bids from UK academics; this is a good way of helping to build scientific capacity in developing countries. The programme has held two funding rounds

   1 See “ESPA’s Impact Strategy” at: http://www.espa.ac.uk/impact
that were specifically designed to foster building capacity: Strengthening Research Capacity (2008) and Partnership and Programme Development (PPD) grants (2009). The purpose of the latter scheme was to facilitate development of trans-national interdisciplinary teams capable of bidding successfully for major consortium-scale projects (£2-4M each). Workshops were also held in developing countries to help to stimulate proposals, and the ESPA directorate has been established, part of the role of which is to help to foster scientific capacity in developing countries.

7. The MRC and DFID work with the Wellcome Trust, Department of Health and ESRC in coordinating UK policy on health research in developing countries through a funders forum established five years ago.

AHRC

8. The Arts and Humanities Research Council does not have a specific collaboration with DFID, although has funded development relevant research, for example recent projects on the legal issues around global land purchase; on craft based industries and sustainable development; and on rights and religion in relation to development. Research on these type of issues is arguably important to development, which suggests that is wise to take a broad based approach when considering the range of areas in which to build capacity (i.e. including, for example, research on legal, ethical, religious, historical issues).

BBSRC

9. The Biotechnology and Biological Sciences Research Council (BBSRC) has a productive and mutually-beneficial partnership with DFID which they are keen to develop further.

10. BBSRC and DFID work together to support agricultural research relevant to the needs of poor people in Sub-Saharan Africa and South Asia. They have jointly funded three programmes of research, each managed by BBSRC:

   I. Sustainable Agriculture Research for International Development (SARID) - £7.3M awarded for 12 projects in 2008².

   II. Combating Infectious Diseases of Livestock for International Development (CIDLID) - £13.5M (including additional funding from the Scottish Government) awarded for 16 projects in 2010³.

   III. Sustainable Crop Production Research for International Development (SCPRID) - up to £20.0M available (including additional funding from the Bill & Melinda Gates Foundation and the Government of India) for projects to be assessed in December 2011⁴.

All of the projects funded through these programmes are based on scientific collaborations between researchers in the UK and developing countries.

11. Whereas BBSRC exists primarily to support science of the highest international quality in the UK, DFID funds research in order to generate knowledge that will help directly to alleviate poverty in developing countries. Those aims are not mutually exclusive, and BBSRC and the Department are committed to working together flexibly to promote and support research that is both of high scientific quality and has substantial development relevance. In particular, in order to address their twin aspirations, BBSRC has developed, in consultation with DFID, tailored peer review and assessment processes that align the parallel requirements for quality and relevance in a common process to the satisfaction of both partners.

³ http://www.bbsrc.ac.uk/funding/opportunities/2008/combating-infectious-diseases-livestock.aspx
12. For its part, BBSRC is keen to encourage excellent researchers amongst the BBSRC-funded community to devote some of their effort to addressing problems that are directly relevant to the needs of agriculture in developing countries; an additional priority for DFID is to contribute to the enhancement of those countries’ own scientific capabilities. These aims have been similarly combined by incorporating in the assessment of proposals a rigorous scrutiny of the proposed trans-national partnership, with a view to ensuring both that it is based on a meaningful and balanced intellectual collaboration which will provide added value by bringing together complementary expertise, and that it has the potential to enhance the scientific capacity of southern partners for the longer term.

13. In addition, each of the three existing joint programmes has included a (progressively more explicit) formal capacity-building element. For SARID, grant-holders were able to apply for supplementary funding for capacity-building activities - for example, to enable the southern partners to extend the reach, beyond their own institutions, of capabilities they had developed during the projects. For CIDLID, wider capacity-building considerations formed a more explicit element of the initial project assessment process.

14. For SCPRID, the call for proposals set out a more substantive expectation that up to 10% of the funding requested by applicants would be for scientific capacity-building in developing countries. That might include activities to develop and strengthen the knowledge and skills of individuals, or to improve institutional structures and processes - for example, through knowledge-sharing events, international exchanges, mentoring schemes or training courses, as well as visits (of varied duration) to laboratories in other institutions (including those in other countries) by individuals of any level of seniority or experience (from doctoral students to principal investigators). As for SARID and CIDLID, proposals could also include requests for funding of doctoral research studentships for individuals from developing countries of Africa or South Asia (but the capacity-building component of the proposed project must also include other appropriate activities, not just the provision of support for studentships).

15. Additionally, a distinct element of the SCPRID call was targeted at early-to-mid career scientists from developing countries, who were invited to submit proposals for Projects for Emerging Agricultural Research Leaders (PEARLs). Under this aspect of the call, funding would be provided specifically for a small number of projects each initiated and led by a ‘PEARL Fellow’ whose full-time salary costs would be covered for the duration of the project.

16. The purpose of a PEARL is to enable the Fellow, as lead investigator, to devote himself or herself to the proposed project, and to spend significant periods of time working in another relevant laboratory outside his or her own country, as well as in his or her home institution which would be expected to relieve him or her of all teaching and administration duties for the duration of the award. The award of a PEARL is intended to contribute to improving the scientific capacity of the Fellow’s home institution in Africa or Asia, as well as enhancing his or her individual development and career progression. The response to this aspect of the call was relatively disappointing, for reasons that are not entirely clear but appear to include the reluctance of institutions to release potential Fellows from all of their existing responsibilities should an application be successful.

17. The capacity-building requirement of SCPRID and earlier programmes is intended primarily to enhance the capabilities of the national research programmes of individual countries, as distinct from international organisations (such as the Consultative Group on International Agricultural Research) whose institutions might be located in those countries. While all of the projects funded by BBSRC and DFID are based on partnerships between researchers in the UK and developing countries, the programmes’ success in facilitating local engagement with national programmes has been relatively limited.

18. The existence of BBSRC and DFID for different purposes is reflected in the different 'due processes' to which their activities are subject, but the Council has always found the
Department to be open to discussion, and good working relationships have allowed the amicable resolution of any operational differences. However, there is one issue that has posed particular challenges. On the one hand, BBSRC is able to provide funding only to universities, Research Council institutes and certain other institutions in the UK. On the other hand, under the provisions of the International Development Act 2002, DFID funding cannot be 'tied' to particular countries or institutions. The extension to DFID’s research funding of the requirement that the UK’s aid funding must not be tied has presented some difficulties for the Council and the Department in defining the terms of institutional eligibility to apply for support from their joint funding schemes.

19. BBSRC’s preference is to require that any project funded jointly with DFID must include, as a minimum, one eligible scientific partner from the UK and one from a developing country (but with no restriction on the number or location of additional partners, or on the location of the researcher responsible for the overall scientific leadership of the proposal). Such a condition does not sit entirely comfortably alongside the requirement for DFID’s research funding to be accessible globally, but is preferred by BBSRC because of the Council’s aim to encourage excellent UK scientists to align their expertise with that of overseas collaborators in order to address problems of direct relevance to the needs of developing countries.

20. In addition, a fully open global call for research proposals has the potential to attract a very large number of applications disproportionate to the funding available, not only causing a heavy administrative workload but also, and more importantly, placing a very considerable burden on assessment panels and the peer review community, and increasing the likelihood of unfair outcomes from an over-loaded system as well as representing a great deal of wasted effort expended by the large proportion of unsuccessful applicants. Furthermore, in BBSRC’s experience of the SARID programme, for which the call was an open one, many of the applications that did not include a UK partner were of poor quality and uncompetitive in the assessment process. Understandably, aside from scientific considerations, there appear to be clear benefits to applicants from developing countries of being associated with a UK partner familiar with the practices and procedures of the Research Councils and their peer review systems.

21. Finally, effective capacity-building is a gradual process that needs to be viewed from a long-term perspective. Partnerships between researchers at the cutting-edge of their disciplines in the UK and colleagues in developing countries are well placed to enhance the scientific capabilities of the latter. However, continued interaction is necessary to enable such relationships to flourish and extend their influence more widely. In particular, there is a need for ongoing access to appropriate funding sources to sustain and develop international partnerships, not just occasional calls for proposals.

22. BBSRC and DFID continue to build on its good relationship by addressing several areas of interest (e.g. institutional eligibility, encouraging the best scientists to align their expertise and build capacity among developing countries’ collaborators to become familiar with the practices and procedures of the Research Councils and peer-review systems) and looking for solutions, and expanding their mutually-beneficial strategic partnership over the next few years.

ESRC

23. In addition to ESPA, the Economic and Social Research Council (ESRC) supports two further schemes in partnership with DFID, which have an element of scientific capacity building:

I. ESRC-DFID joint scheme for research on international development (poverty alleviation) was first established in 2005 with a total budget of £13M (£7.5M from ESRC and £6M from DFID). A second Phase started in 2009 with a total budget of £23M (£8M ESRC and £15M DFID). The scheme funds world-class scientific research on a broad range of topics to enhance the quality and impact of social science research and contribute to the achievement of the MDGs. As well as
research excellence, all applicants have to demonstrate that research outputs have potential impact on poverty reduction and relevance to decision makers.

II. DFID-ESRC Growth Programme was established in 2010 with a budget of £10M. The Programme funds world-class scientific research on issues relating to inclusive economic growth in Low Income Countries (LICs), with high potential for impact on policy and practice.

24. These schemes use similar mechanisms to ESPA to support scientific capacity building (see paragraph 5). The scheme managers are clear that he focus is on capacity building through doing research and all applications must spell out how capacity building will be approached through the research programme. The ESRC-DFID Poverty Alleviation Strategic Advisory Team has a carried out a review of Southern led applications which will help to inform future approaches relevant to capacity building. Recommendations include using a two stage process (outline and full proposals) to focus the often limited effort available on the most promising proposals; further proposal writing workshops and workshops for shortlisted applicants; and reviewer comments more focused on how proposals could be improved. Another approach is for southern research students and research assistants to spend a substantial part of the research programme in a UK HEI.

MRC

25. The Medical Research Council (MRC) has had a concordat agreement with DFID and its predecessor the Overseas Development Administration in place since 1993. The concordat is the basis of a partnership to support UK or African - led biomedical and public health research which tackles the priority health problems and health inequalities of people in developing countries. The current concordat (2008-2013) allocates £45m to the MRC over five years, which is more than matched by MRC expenditure on global health research.

26. In addition to the concordat the MRC and DFID have worked together on a number of joint projects and schemes. We have jointly supported large international trials on microbicides and antiretroviral therapy for HIV and in 2010 launched a joint scheme between the MRC, DFID and the Wellcome Trust to support clinical trials for global health in developing countries. The MRC and DFID jointly finance the UK contribution to the European and Developing Countries Clinical Trials partnership (EDCTP).

27. The MRC also work with DFID and other government departments on development research through the UK Collaborative on Development Sciences (UKCDS).

28. The MRC is often called upon to assist DFID in policy development and has been consulted on DFID’s current research strategy launched in 2008 and other initiatives.

29. The MRC recently established an expert oversight group to advise on Global Health issues. DFID is represented on the group by their Chief Scientific Advisor, Chris Whitty.

30. MRC and DFID officers meet quarterly to discuss operational issues but communicate informally more frequently. There is an annual meeting between DFID Chief Scientific Advisor and MRC Chief Executive to maintain high-level policy alignment.

31. Following the publication of the 2008-2013 research strategy DFID provided guidance notes on Capacity Building for its Research Programme Consortia which defines Capacity Building as ‘enhancing the abilities of individuals, organisations and systems to undertake and disseminate high quality research efficiently and effectively’. Such a definition encompasses a broad range of activities with an ambitious goal. That goal cannot be achieved in a single step but individual activities, supported locally, can contribute towards establishing a sustainable network of capacity building activities.
32. The MRC is able to contribute to building research capacity though close working with DFID through the concordat. The MRC has research Units in The Gambia and Uganda. The MRC/UVRI Uganda research Unit on AIDS was established following a request in 1988 from the Ugandan Government to the British Government for collaboration on the research of HIV infection and AIDS. The Unit has the mission to conduct research on HIV disease and related infections to facilitate their control in Uganda and elsewhere in Africa.

33. MRC The Gambia Unit was established in The Gambia in 1947. The Unit is the UK's single largest investment in medical research in a developing country. The Unit's research focuses on infectious diseases of immediate concern to The Gambia and the continent of Africa, with the aim of reducing the burden of illness and death in the country and the developing world as a whole.

34. Capacity building through these units takes place at many levels. The most important is the training and career development of staff creating the next generation of local researchers. The Directors of both units are nationals of the two countries and have developed their careers in the context of the MRC units. They are both role models for younger scientists locally and raise the profile of research within the Governments and other agencies within their countries.

35. Delivery of clinical research by the two Units has necessitated investment in clinical infrastructure and the training of staff under Good Clinical Practice (GCP), and Good Clinical Laboratory Practice (GCLP) guidelines. In these cases capacity is developed through practical involvement with high quality research activities and through interaction with international research teams. Research capacity can best be built by active participation and leadership in research activities rather than through unlinked funding or theoretical training.

36. The MRC and DFID have jointly supported the large European initiative to advance the development of new drugs and vaccines against HIV, TB and malaria – the European and Developing Countries Clinical Trials Partnerships (EDCTP). A major component of the initiative is to build capacity for clinical trials in sub Saharan Africa. This has been realised through a number of approaches including:

- support to develop ethics review boards
- South-South networking of institutions
- North-South networking of institutions
- Senior career fellowships
- GCP/GCLP training
- Project management training (including finance and HR development)
- Harmonisation of regulatory frameworks
- Development of clinical trials registries
- Specific short term training schemes
- MSc and PhD support

37. The MRC and DFID have also invested in an African Research Leadership scheme. This scheme is a prestigious award for non-clinical and clinical researchers of exceptional ability. The aim of the scheme is to strengthen research leadership across sub-Saharan Africa by attracting and retaining talented individuals undertaking high quality programmes of research.
38. In addition to its investment in ESPA, the Natural Environment Research Council (NERC) supports capacity building in developing countries via the Changing Water Cycle programme. The four year (2009–2014) £10.1m programme will foster interdisciplinary research that links applied water resources issues seamlessly to fundamental climate system science. A partnership with the Ministry of Earth Sciences (MoES) in India has been established, which has funded five collaborative projects with an investment of over £2.5m from NERC and £1.6m from MoES. The project will be investigating how the water cycle will change in response to climate change and the impact that this will have in South Asia. Capacity will be built among local researchers through participation in the research process.

**STFC**

39. The Science and Technology Facilities Council (STFC) supports the development of overseas facilities and certain collaborations. Examples are detailed below:

I. STFC supports the University of Bristol project ‘Applying the Grid: Landslide Modelling for Risk Reduction in Developing Countries’ through grant funding which was awarded in 2010. The project uses the STFC developed Grid software (as utilised at the Large Hadron Collider) alongside proven, cutting-edge software in the field of slope hydrology and geotechnics. The technology will allow engineers and planners involved in national infrastructure and risk management projects throughout the developing world, to effectively predict and mitigate landslide risk without substantial investment in large and complex local computing facilities. STFC’s funding for this project came through its Innovations Partnership Scheme (IPS). The IPS is not targeted at international development projects, but is designed to transfer technology and expertise developed through STFC research into the market place.

II. STFC has supported the development of the Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME) in Jordan through the gift donation of high-tech components formerly used by the now decommissioned Synchrotron Radiation Source (SRS) at Daresbury Laboratory.

SESAME will serve as a driver for scientific, technical, and economic development of the region and strengthen collaboration in science across the globe. Bringing together Governments and scientists from the nations of Bahrain, Cyprus, Egypt, Jordan, Iran, Israel, Pakistan, the Palestinian Territories, and Turkey, the centre will be open to all scientists from the Middle East and elsewhere. SESAME will be the region’s first major international research centre and be will built in Jordan under the umbrella of UNESCO.

a) STFC funds the UK’s membership subscription of CERN (European Organization for Nuclear Research) on behalf of the United Kingdom. CERN is Europe’s particle physics laboratory and one of the world’s largest and most respected centres for scientific research. Around 10,000 scientists use the facilities representing 608 universities and 113 nationalities, which includes many scientists from developing countries. A number of non-European states, including India, have Observer status and many others have co-operation agreements.

b) Amongst CERN’s core values are its commitments to bringing nations together through science and training the scientists of tomorrow. CERN operate educational programmes for summer students and high school students, which attract attendees from all over the world, including over 900 teachers in 2011. Outreach and development initiatives with developing nations, most notably across the African continent are significantly operated in this respect.

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5 http://www.nerc.ac.uk/research/programmes/cwc/
6 http://www.stfc.ac.uk/gow/Smi/grls.asp?cx=06&sc=0&so=dd&nv=XXXX&pi=--586
7 http://www.sesame.org.jo/sesame/
For instance, alongside several international collaborators, CERN supports the African School of Fundamental Physics and its Applications (ASP). The first of these biennial events was first held in Stellenbosch, South Africa in October 2010. The project supplied 50 fully financially supported places for Physics students from across 17 African countries to attend an intensive, three week school aimed at raising future development across the continent. The next of these events will be held in Kumasi, Ghana in 2012.

c) Other areas of activity include those with UNESCO under the umbrella of the International Basic Sciences Programme (IBSP). Examples of this work include, the organisation of two schools on digital librarianship in Rwanda and Morocco and in-depth training for 30 participants in 2010, with the aim of passing on the knowledge and experience that CERN has gained from handling documents for the high-energy physics community.

d) CERN supports AFRICA@home, which encourages the use of volunteer computing to help solve health and environmental problems. African students and universities are involved in the development and running of these volunteer computing projects, the first of which related to the epidemiology of malaria. CERN also has projects funded by the EU, for example HELEN (High Energy physics Latinamerican-European Network), which has helped collaboration in that area.

**EPSRC**

40. EPSRC’s interest is in taking a broad global overview of addressing research challenges in both developed and developing countries. For example, EPSRC has supported research into renewable energy technologies (including plans to develop collaborative research between EPSRC, DECC and Bangladesh), a collaborative programme of research supported through the Digital Economy programme and the Indian DST on use of Digital technologies to bridge the urban rural divide and participation in understanding the role of engineering in managing earthquakes and flooding. EPSRC has also been actively engaged as a member of the UK Water Research and Innovation Framework which looks at the research and development and skills needs around future water security and supply and is also a member of UKCDS.

What are the most effective models and mechanisms for supporting research capacity in developing countries?

41. The funders of development research in the UK, including DFID, BBSRC, EPSRC, ESRC, MRC, and NERC, work under the umbrella of the UK Collaborative for Development Science (UKCDS). UKCDS manages a subgroup which specifically looks at research capacity building initiatives and sharing of best practice.

42. The factors affecting research capacity are complex and vary between sector and countries. It is therefore essential that specific schemes designed to build research capacity follow consultation and discussion with researchers already working in country as well as with donor countries and organisations. Access to information can be a fundamental issue in supporting the research base and online access to journals, networking of specialist support such as ethics or clinical trials management, can be as important as investing in people or training.

43. Capacity building schemes should be designed to ensure that the impact of a scheme to build capacity for research in one area does not distort the investment profiles of local institutions or universities. Pump priming of areas with funding from the UK can lead to neglect of other areas, distort local salaries, and redirect training and manpower. If short term funding stops the institute may be ill equipped to benefit from the pump priming. Once again, partnership is key to a successful initiative and there should be appropriate institutional engagement from the

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8 http://africanschoolofphysics.web.cern.ch/africanschoolofphysics/
9 http://www.ukcds.org.uk/index.php
start in order to support rather than undermine the research environment where investment is
taking place.

44. If they are to be sustainable, capacity building activities should 'plug in' to and complement
individual countries' own ambitions and strategies to develop research capacity. As individual
countries frequently want to 'grow' their higher education sector, encompassing a very broad
range of research sectors, capacity building activity may need to reflect this breadth (or be
mindful of the implications of targeting activity to specific sectors).

45. It is important to recognise the UK is only one part of a much wider universe of actors with
responsibility for capacity building. The most important stakeholder should be national
developing country governments, higher education agencies, and users of research (e.g. the
private sector, policy-makers), with DFID – via its country offices - and UK agencies focussing
on adding value to the activities of these key players. For example, the ESPA directorate is
looking for ways to work in partnership with such stakeholders. If too much capacity
strengthening is provided externally there is limited incentive for national governments to make
this a national priority.

46. The challenge is to use external support to help get the capacity building process started, to fill
immediate gaps and stimulate demand, whilst working towards a transition to a situation where
national developing country governments recognise the importance of investing in science.
DFID increasingly promotes the importance of evidence-based business cases for
development and at the same time promotes the need for nationally owned development
priorities. The logical extension of this would be to look forward to having a more joined up
approach in DFID to capacity building for research and evidence linking both the central RED
activities with country-level activities (and hence national development priorities).

**How does the Government monitor and evaluate the effectiveness of the scientific capacity
building activities it supports? Is further assessment or oversight required?**

47. ESRC has an annual review of progress for the three Programmes described above using the
DFID logframe methodology\(^{10}\). In addition more overarching evaluations of the programmes
are carried out periodically. For example, the ESRC-DFID Poverty Alleviation programme is
currently being reviewed by an independent organisation.

48. MRC has agreed to participate in the ESSENCE initiative to monitor and evaluate capacity
building activities. ESSENCE (Enhancing Support for Strengthening the Effectiveness of
National Capacity Efforts) was established by funding agencies to assist in the coordination
and harmonisation of the research capacity investments within a common framework\(^{11}\)

49. RCUK is working internally to consider the current approach to RCUK-DFID partnership to
maximise the benefits of this very positive relationship which has been welcomed both by the
funders and by the academic community that it serves. Part of the internal discussion is likely
to include evaluation of mechanisms, including guidance to applicants, and to look at
opportunities to improve access of the various schemes to developing country collaborators.
This will involve developing the capacity of institutions to take a leading role in successful
proposals.

**What role does DFID's Chief Scientific Adviser play in determining priorities and in the
development and assessment of capacity building policies?**

50. DFID’s Chief Scientific Advisor (CSA), Professor Chris Whitty maintains oversight of research
work undertaken at the MRC, NERC and UKCDS in respect to International Development. He

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is a member of MRC’s Global Health Group, which advises on global health policy and funding, and holds an annual meeting with MRC’s CEO. In addition, MRC and DFID have quarterly meetings to ensure alignment of priorities, which are fed back to the CSA, NERC and DFID also hold similar meetings. The CSA also sits on the board of the UKCDS and is therefore responsible for oversight of the work of the organisation.

51. The CSA is also informed by discussions at officer lever of the UKCDS and the UK Funders Forum for Health Research in Developing Countries.

**How are government activities co-ordinated with the private and voluntary sectors?**

52. Government activities are co-ordinated with the private and voluntary sectors particular through the UKCDS which has membership from across the sectors. In addition there are a range of contacts at the level of individual programmes, including with overseas organisations such as the Hewlett Foundation and NWO.

53. The UK Funders Forum for Health Research in Developing Countries involves representatives from the Wellcome Trust, Department of Health, DFID, MRC and ESRC. MRC works informally with Product Development Partnerships (PDPs) though participation in EDCTP, and through ad hoc bilateral discussions. DFID works much more closely with the PDPs and this has had many positive effects such as the increase in clinical trial capacity for research on neglected tropical diseases in developing countries.

**Conclusion**

54. RCUK welcomes this inquiry as an opportunity to demonstrate the progress that has been made, both by individual Research Councils and by the UKCDS since 2004.

Research Councils UK

December 2011
Written evidence submitted by the Special Programme for Research and Training in Tropical Disease (TDR) (Int Dev 26)

DfID support to the Special Programme for Research and Training in Tropical Disease (TDR) for building capacity in research on diseases of poverty

The Special Programme for Research and Training in Tropical Disease (TDR) was established in 1975 with the objectives to: (1) develop new methods of preventing, diagnosing and treating tropical diseases; and (2) strengthen - through training and support to institutions - the capability of developing endemic countries to undertake the research required to develop disease control tools and technologies. From the beginning, there was a strong emphasis on the involvement of both funders and recipients.

DfID has made significant core funding contributions to TDR over the past 35 years totaling over US$ 60 million, of which a significant amount was used for TDR's activities in building research capacity in low and middle income countries.

TDR has undergone four reviews of its capacity building activities since it was established. All four studies reported high success in training programmes and a high satisfaction rate from the grantees. Most of the grantees trained abroad have returned to their country of origin and have moved up to higher positions in their institutions or in government agencies. Both institutions and individuals have increased their publication records, their national and international collaboration and the number of competitive grants gained in the post-grant period. The majority of grantees attributed a high proportion of their research skills to the TDR-funded training. They reported that this training allowed them to participate in international meetings and establish collaborations with policy makers. Consistently, the Special Programme has been advised to maintain and expand its investment into training and capacity building.

First review cycle (1975-1990)

Over these 15 years, 179 institution-strengthening were awarded to 134 institutions in 45 countries, with five countries (Argentina, Brazil, Kenya, China, Thailand) receiving more than ten grants. The majority of these grants were long-term institution-strengthening grants (LTG), which were the only institutional grants awarded until 1988.

The review showed that the scientific publication record at these institutions increased from six to 14. Most of the institutions increased the number of competitive grants received compared to the pre-grant period. All institutions established or improved their national and international collaborative activities during and after the grant period: 96% of them had collaborations with national government, 83% with other national institutions and 48% with international institutions, this last factor being an important measure of success. Most of the individuals trained with these grants stayed in the training institution and some moved to higher positions. Among the most cited factors of failure were macro-political and macroeconomic ones, and a lack of leadership and senior scientists to provide support.
During the same period, 1,241 training grants were awarded to 993 individuals, with the majority of grants (57%) awarded to individuals coming from Africa and Latin America. About 90% of the respondents were satisfied with the training they received through the TDR grant. The review reported a high rate of training completion (90%) and almost all the grantees returned home (93%). However, many grantees also experienced some problems after returning to their home countries. The most frequently cited constraints were: lack of material and financial resources, low economic reward for research and poor research career structure; lack of access to scientific literature, lack of transport and logistic support for field work, burdensome administrative procedures; lack of support from supervisors and lack of trained technicians. A large proportion of the grantees were still active in their fields, and most had gone on to higher positions in their institutions or other institutions in their country or in governments or academic centres.

The review identified a good publication record (ranging from 1 to 5 papers in international peer-reviewed journals) for 71% of the grantees. About 45% of the grantees gained international competitive grants after their TDR training and over 50% of re-entry grants recipient were successful in competing for TDR R&D grants. Only 26.6% of the training was awarded to women, with large variations from different geographical areas (the highest rate was in South East Asia at 42.2%).

The main recommendation of this review was to make the training of promising, motivated and talented young researchers the cornerstone of the TDR capacity building strategy, and to support more in the Least Developing Countries (LDCs). Some concerns were raised about the gender balance and research topics balance. Few grants were awarded to women and most funded projects were on epidemiology, entomology and basic research. Malaria accounted for 50% of all funded projects. Also recommended was the promotion of research in social sciences and health economics to help translate research findings into public health policies and to develop a suitable TDR-grants monitoring system.

Second review cycle (1990-1997)

The second review included all TDR-funded PhDs (131), re-entry grants (30) and three modalities of institution strengthening grants (25):

1. The programme based grants (PBGs) awarded on a competitive basis to strengthen research and/or training programmes.
2. The ‘3+2’-year grant which was awarded mainly to institutions in the least developed countries to develop core research staff in countries where research was not well developed.
3. The partnership grants established in 1988 in cooperation with the Rockefeller Foundation to establish cooperation between northern and southern institutions with complementary expertise.

The review noted that the programme made a large effort to train highly motivated and talented individuals in developing countries and this led to an extraordinary growth of scientific knowledge and techniques for tropical diseases. Interestingly, in response to the recommendation of the first review, the least developed African countries accounted for 51% of all grantees. Publication records showed that African trainees published more compared to the others, and a Medline review showed that 60% of the trainees published more in the post-grant period. The TDR-PhD graduates were more successful in obtaining other TDR grants such as re-entry grants or R&D grants. Some 63% of the re-entry grants were awarded to African scientists who introduced modern laboratory techniques such as Polymerase Chain Reaction (PCR), gene cloning and sequencing in developing countries.
Third review cycle (1990-2000)
The results from this study, conducted on 133 individual research training grants, showed a high score of satisfaction from the grantees. About 80% had published more than four articles in peer-reviewed journals, and they reported that their findings were incorporated into policy or programme changes. All reported that they had at some stage contact with policy-makers and had participated in national and/or international meetings; 75% were principal investigators (PI) or co-PIs in research projects. The TDR grant allowed most of them to develop national and international collaborations, mainly with universities and one quarter developed new tools or methodologies, essentially diagnostic tools.

Fourth review cycle (2000-2008)
During this time, TDR supported the development of 116 research training grants (RTG), 22 career development fellowships (CDF), 83 re-entry grants (REG), 57 research grants for the Multilateral Initiative on Malaria (MIM/TDR), and 41 institution-strengthening grants (ISG).

Most grantees (individuals and institutions) were satisfied with their collaboration with TDR. However, there was disequilibrium with regards to gender and the majority of the grantees came from the English-speaking countries. In least developed countries, the training grants were highly appreciated due to the lack of qualified scientists and the poor research infrastructure there. In high income countries, the TDR research grants were even more highly appreciated, because they were perceived as useful additions to the local funds, particularly for young researchers who were yet established and could not compete for international competitive grants.

The main recommendation was that TDR should maintain and even expand its investment into training and capacity building, and should consider developing country-specific programmes in collaboration with WHO country offices and national authorities to address specific needs of each country.

Special Programme for Research and Training in Tropical Disease (TDR)
Geneva

16 December 2011
In response to the Science and Technology Committee’s call for evidence, abc has prepared the following submission that outlines abc’s views in terms of supporting research capacity in developing countries.

The views expressed in this submission are those of abc - the umbrella organisation for the agricultural biotechnology industry in the UK. abc, comprising of six member companies, works with the food chain and research community to invest in a broad range of crop technologies – including conventional and advanced breeding techniques, such as GM. These are designed to improve agricultural productivity by tackling challenges such as pests, diseases and changing climatic conditions whilst reducing water usage, greenhouse gas emissions and other inputs.

abc is unable to provide comprehensive responses to all of the questions as part of the Committee’s Call for Evidence, however this response does provide relevant examples of where the application of scientific research is helping to address the food security challenge across the developing world.

1. Introduction

1.1. 1.4 billion people worldwide live in poverty, and an estimated one billion of these people live in rural areas\(^1\). This problem is particularly acute in rural Sub-Saharan Africa, where over 60 per cent of the rural population live in poverty. A recent report by the ODI showed that issues of poverty can be best tackled by investment in the agricultural sector, with GDP growth in agriculture contributing twice as much to poverty reduction than any other sector\(^2\).

1.2. With the world’s population set to rise to 9bn by 2050, more food is needed from a similar amount of agricultural land – otherwise food price instability will continue to increase and the pressure on precious areas of natural land will intensify.

1.3. abc believes that research into GM is a particularly relevant area of science for the developing world. The use of technology in agriculture together with better agronomic training will be critical to the feeding of this increased population. abc believes that biotechnology is one such technology that, appropriately introduce, can make a difference.

1.4. Commercialised GM crops include maize, cotton, canola, soybean, squash, papaya, sugar beet, tomato, cassava, sweet pepper and alfalfa. Trials are currently in progress on crops including sorghum, bananas and wheat.

2. Current application of GM in the developing world

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\(^1\) International Fund for Agricultural Development. (2011). Rural Poverty Report. IFAD

\(^2\) Overseas Development Institute. Agricultural Productivity and Poverty in Developing Countries. ODI
2.1. GM technology is currently being used by over 15 million farmers on 148 million hectares of land (the equivalent land mass of France, Germany, the UK and Ireland put together)\(^3\). Over 90 per cent of those using the technology are resource-poor farmers in developing countries growing food, feed and materials on an area often considerably less than 10 hectares per farmer.

2.2. Without significant increases in yield and utilising solutions to crop destroying diseases, policy makers will struggle to address hunger and under-nutrition – something that affects almost 1bn people today. GM technology is one of a range of tools available to help deliver these yield increases.

2.3. GM crops offer the potential for increased yields, greater pest and disease resistance, lower machinery and fuel costs, better nutritional value and greater drought tolerance. All of this makes GM technology (also known as agricultural biotechnology) an option for farmers across the developing world; from small-scale sorghum farmers in sub-Saharan Africa, to rice farmers in Asia.

2.4. Drought tolerance technology, which allows crops to withstand periods of low soil moisture, is anticipated to be commercialised within 5 years. The technology will have particular relevance for areas like sub-Saharan Africa, where drought is a common occurrence and access to irrigation is limited.

2.5. A number of internationally-respected reports have recognised the role of GM in dealing with the challenges faced by the developing world. In January, the Government Office for Science published the Foresight Report on Global Food and Farming Futures. It called for the inclusion of GM as a key part of the approach of policy makers to meeting soaring demand and pressure on resources and for a sensible and science based assessment of the role that the technology can play.

3. Effective models and mechanisms for developing research capacity in developing world

3.1. abc member companies are partners in a number of (non-DfID related) initiatives for resource poor farmers, for example in collaboration with the Bill and Melinda Gates Foundation and other NGO’s. Most commentators agree that such public-private partnerships are the best way forward in many cases.

3.2. Positive and robust regulatory regimes in other parts of the world have allowed public private partnerships to flourish, with local scientists taking the lead on producing tailored crops for specific climatic conditions. An example of an abc partnered initiative in relation to the development of disease-resistant GM bananas in Uganda is provided below.

3.3. In central Uganda, one of the main banana-growing regions, Banana Xanthomonas Wilt (BXW) hits up to 80 per cent of farms, sometimes wiping out entire fields. To get rid of BXW, it is necessary to dig up and burn the affected plants, disinfect all

\(^3\) ISAAA, (2011) Global Status of Commercialized Biotech/GM Crops: 2010
http://www.isaaa.org/resources/publications/briefs/42/executivesummary/default.asp
machinery and tools and allow the ground to lie fallow for six months before replanting. For small-scale farmers, leaving their gardens lying empty for this long is not an option, and they switch to other crops.

3.4. Bananas are the staple food of Uganda and are the country’s second largest cash-crop after coffee. The disease is endangering the livelihoods of the nations’ farmers, 75 per cent of who grow bananas, and threatening an important food source in one of the poorest nations in the world. Damage caused by BXW is now estimated to cost farmers in the East Africa region half a million US dollars per year.

3.5. The International Institute for Tropical Agriculture and the African Agricultural Technology Foundation have been developing a GM solution to the problem of BXW, in conjunction with a Taiwanese biotechnology institute, Academia Sinica (AS). AS has issued IITA and the AATA with a royalty-free licence to use its Hypersensitive Response Assisting Protein (HRAP) gene technology. As successfully transplanted the sweet pepper HRAP gene into the other vegetables where it produces a protein that kills cells infected by disease-spreading bacteria. This is the first time it has been tried with a banana, although initial trials are promising, with six out of eight strains showing 100 per cent resistance to BXW. Development of wilt-resistant GM bananas has now progressed to the confined field-crop testing stage and is showing promise.4

3.6. At the same time, Ugandan banana farmer Mr. Erostus Wilberforce Njuki set up Agro Genetic Technologies – (AGT) the only private enterprise firm in Uganda that uses biotechnology to produce tissue cultures for crops such as bananas that have historically suffered from disease. AGT has a capacity to produce 5 million banana planting materials which are distributed through a chain of 26 nurseries, five of which are owned and operated by AGT and 21 others are operated by farmer organizations with the support of the National Agricultural Advisory Services. AGT also operates one nursery in Kigali, Rwanda. Currently, through the National Agricultural Research Organisation (NARO), AGT is currently conducting research into GM Bananas enhanced with vitamin A, as well as research on bacterial wilt and Black Sigatoka resistance.

3.7. abc therefore suggests that a more effective regulatory regime in Europe would lead to a flourishing of public private partnerships, leading to significant injections of funding into research centres such as the National Institute for Agricultural Botany (NIAB) whose agricultural R&D could then be applied across the developing world in order to tackle food security.

4. The role of DfID in supporting agricultural technology research in the developing world

4 http://www.sinica.edu.tw/manage/gatenews/showsingle.php?_op=?rid:4043%26isEnglish:1
4.1. The UK Government, through the Department for International Development, is heavily involved in supporting agricultural projects in the developing world, through organisations such as the African Agricultural Technology Foundation.

4.2. DfID works in partnership with research funders and institutes in the developed world to ensure that their advanced expertise in agricultural technology is directed towards solving global problems.

4.3. DFID has already demonstrated its willingness to invest in research into the expanded role that GM technology could play in adapting crops to the conditions brought about by climate change in the developing world. However, this funding is being directed overseas because the current EU process for regulating agricultural biotechnology is heavily politicised and dysfunctional.

4.4. A good example of these partnerships is the recent grants from DfID and the Bill and Melinda Gates Foundation to the Durable Rust Resistance in Wheat (DRRW) project at Cornell University in the US.

4.5. Through this new collaboration, Cornell University will continue its work to develop GM wheat varieties that are resistant to emerging strains of stem rust disease, such as Ug99, which are spreading out of East Africa and threatening the world’s wheat supply. Kenya is among countries set to benefit from the research, which will support efforts to identify new stem rust resistant genes in wheat, improve surveillance, and multiply as well as distribute GM rust-resistant seeds to farmers.

4.6. DfID has made a five year grant of $15 million to the project, while the Bill and Melinda Gates Foundation will provide $25 million.

4.7. However, this $15 million of UK tax payer funding could have been invested in UK research. This is mostly due to the erosion of industrial R&D over the past decade caused by the current EU process for regulating agricultural biotechnology. In addition, abc believes that more thought should be given by the Government to how the remaining UK research base could provide solutions to the challenges identified.

4.8. abc welcomes this commitment by DfID to the research and development of agricultural biotechnology solutions to some of the key challenges facing global agriculture. However, it is regrettable that such a significant investment was not made in the UK, thereby increasing the ability of the UK research sector to achieve its full potential in addressing the challenges facing global food supply.

4.9. Through its refusal to allow the cultivation of biotechnology, Europe is continuing to erode the industrial R&D base including jobs, skills and corporate infrastructure across the EU which is required to catch up with global competitors and contribute to tackling issues such as food security in the developing world.

Agricultural Biotechnology Council

16 December 2011
Written evidence submitted by the Natural Resources Institute, University of Greenwich (Int Dev 28)

1. The Natural Resources Institute (NRI) is a specialist Institute of the University of Greenwich providing research, consultancy, training and advisory services to underpin food security, sustainable development, economic growth and poverty reduction. The majority of these activities focus on the harnessing of natural and human capital for the benefit of developing countries.

2. The Institute maintains a programme of research and technology generation in life sciences, social sciences and economics. Funding is on a full cost-recovery basis with total research funding in the order of £10 million (2010-11), approximately from one third from UK central government, primarily DFID, and the other main sources of funding being European Commission, Bill and Melinda Gates Foundation. Since NRI joined the University of Greenwich, over 200 post-graduate students have been registered for research degrees, a high proportion of these from developing countries. Research also underpins postgraduate taught programmes in natural resources, food safety, and food technology management, as well as short courses in specialized areas carried out both in the UK and overseas. Capacity strengthening is one of NRI’s key theme areas and we lead or participate in a range of training and institutional development initiatives supported by the European Commission and DFID.

3. Each year NRI staff undertake around 600 professional overseas assignments in over 80 countries (mainly in the developing world or in countries with transitional economies) as consultants, researchers, advisors or educators.

4. NRI’s main focus is on agriculture, natural resources and food security and it is on scientific and technology capacity building in developing countries in these areas that our evidence focuses.

How does the UK Government support scientific capacity building in developing countries and how should it improve?

5. There are compelling reasons why agriculture, food and natural resource-related science and technology are important for the achievement of the MDGs. Over 70% of the world's poor live in rural areas and depend heavily on natural resources and agriculture for their livelihood and food security. But the limited institutional capacity of developing countries, particularly in sub-Saharan Africa, to use modern science and technology in support of their development will severely constrain their chances of reducing poverty.

6. As the UK Government’s international development agency, DFID should have the lead focus for science and technology capacity building in developing countries. However, the role of DFID (and its predecessors) in this important area of development is chequered.

7. At independence in the 1950s and 1960s, there were very few agricultural research and training organisations in sub-Saharan Africa, and those that existed were heavily dependent on northern scientists, including those from the UK sponsored by the UK Government in various guises. International development agencies (including the UK) provided support for capacity development in science and technology for agriculture from the 1960s to the mid-1980s focussing largely on the establishment of public sector agricultural research stations, agricultural colleges and faculties of
agriculture in universities. Priority was given to developing physical infrastructure through government funded capital projects and to the recruitment and formal training of staff.

8. During the 1980s locally provided public sector budgets for agricultural research and training in sub-Saharan Africa were substantially reduced as part of structural adjustment programmes and this led to an increasing dependence on donor funded projects and on loan programmes from the World Bank to support them. DFID was one of several agencies that actively contributed to these programmes in which there was a stronger emphasis on formal post-graduate training in universities in the North.

9. In the 1990s, bilateral and multi lateral donors lost confidence in support for agriculture, including scientific and technological research. Funding effectively came to a halt such that in many cases agricultural scientific and technological research institutes in Africa are no longer fit for purpose.

10. The loss of donor confidence in support for agriculture arose partly from the lack of clear evidence of impact and seminal studies showed that in many situations, particularly in sub-Saharan Africa, disciplinary-based approaches to research and the linear model of developing and transferring agricultural technologies were not effective. This led to the recognition of the need for more nuanced alternative approaches. These included “farming systems” and “farmer first” approaches, greater use of socio-economic expertise, and an increased emphasis on linking farmers to markets and on the need to understand the “innovation system” in which the developments were grounded. However, such developments in thinking (largely in the North) have not been fully mainstreamed either in training or research institutions in sub-Saharan Africa and the problem of limited uptake of agricultural technologies remains. A related issue is that even with limited national or international funding, linkages between national agricultural research organisations, universities and other actors in putative National Agricultural Research Systems (NARS) remained very weak. There has been much discussion about the concept of NARS, in which different types of organisation contribute in different ways to agricultural research and development. However, although there have been some improvements in most countries the NARS do not function in an integrated and coherent way.

11. The current position is that the serious lack of investment in public agricultural research, extension and training organisations leaves sub-Saharan Africa in an extremely vulnerable state with respect to food security. There is little prospect in many countries in the region of meeting the Millennium Development Goals, particularly for poverty and hunger. Recruitment of new scientific research staff has been frozen in many countries for over 10 years and the age structure of existing staff is highly skewed, with a substantial proportion of staff close to retirement. Because of the low salaries and poor conditions in the workplace, there has been an exodus of staff to other organisations or professions. In countries which have undergone conflict the situation is considerably worse due to the destruction of infrastructure and the higher losses of trained staff.

12. Against this background, in 2007 DFID commissioned the Forum for Agricultural Research in Africa (FARA) and NRI to develop the project ‘Strengthening Capacity for Agricultural Research and Development in Africa’ (SCARDA) designed to begin to support the wider needs of national agricultural research and training organisations in Africa. SCARDA aimed to develop and test an
approach which enhances the capacity of national agricultural research and training organisations to plan, manage and implement high quality and relevant research. This approach had several key features. Capacity strengthening interventions were targeted at selected ‘focal institutions’ which have a key role to play within their respective national agricultural research systems. The focal institutions were assisted to analyse their capacity needs and to develop change management plans which will help them to improve their effectiveness. Support was provided in specific priority areas identified by the focal institutions, but only if this had clear potential to enhance the overall performance of the institutions. Local partner organisations were included in selected activities and stakeholder feedback was an important means of assessing whether the performance of the focal institutions has improved.

13. The design of the SCARDA project reflected FARA’s commitment to position the initiative firmly within the framework of the Comprehensive Africa Agricultural Development Programme (CAADP) which is now the main focus of DFID’s support to agriculture in Africa. FARA provided overall coordination, whilst implementation of activities was managed by the sub-regional organisations in the three sub-regions of sub-Saharan Africa (ASARECA in East Africa, CORAF/WECARD in West Africa and SADC-FANR in Southern Africa). The active involvement of the sub-regional organisations created scope for capacity gaps common to several countries to be identified and for learning to be shared between countries. Learning was also shared across sub-regions through the establishment of knowledge networks. NRI was tasked with providing technical support to FARA and contributing specific capacity strengthening inputs in response to requests from the sub-regional organisations.

14. The SCARDA project ended on 31 March 2011 but DFID has provided additional support to 31 December 2011 to document the process and the main outcomes. DFID’s future strategy is to channel support for capacity development through the sub-regional research organizations.

15. Prior to the SCARDA programme DFID invested significant funds between 1995-2006 in the Renewable Natural Resources Research Programmes RNRRS. The component parts of these programmes generally invested in collaborative research projects involving partnerships between a range of local institutions and mainly UK partners. Although capacity building was not an overt feature of these programmes, there are numerous examples where the capacity of individuals and organisations were strengthened as part of the research and development activities. Elements of this continued in the Research into Use Programme.

16. In recent years DFID has also included a capacity strengthening component in programmes that it has jointly funded with the Biotechnology and Biological Sciences Research Council (BBSRC). However, the proportion of funds allocated to capacity building has been limited and did not form part of the original programme design. It remains to be seen whether this rather ad hoc approach of providing small amounts of additional funds for individual grant holders will lead to measurable benefits at the organizational level.

17. DFID also supports Fellowships or studentships funded through support for organizations such as the International Centre for Insect Physiology and Entomology (ICIPE) or programmes such as the Futures Agriculture Consortium.

18. DFID support to capacity strengthening is essential if increased overall support to agricultural research for development is to have the expected level of
impact.

19. Approaches for improving the situation with respect to capacity building programmes.

**What are the most effective models and mechanisms for supporting research capacity in developing countries?**

20. There are a number of lessons that may be drawn from the experience of capacity development of agricultural scientific research and technology organisations in sub-Saharan Africa since the 1950s; for example:

- The returns on investment in infrastructure (often donor funded) have generally been low because inadequate funding for recurrent costs (mainly national funds) has meant that new facilities have not been fully utilized.
- Because of their limited operating resources, organisations have tended to welcome external support for particular initiatives which may not always be in line with their main priorities.
- Donor initiatives have often supported the training of individuals, for example through MSc and PhD programmes often hosted by northern universities. However, the impact of this type of training has not been as great as anticipated because returning staff have not always had suitable opportunities to apply their new skills in their home environment.
- Specific projects funded by international donors may have successfully strengthened individuals, departments or programmes in research and training organisations in sub-Saharan Africa but they have not commonly been able to transform these gains into wider institutional strengthening.

21. There is a need to ensure that capacity building initiatives are coordinated to maximise their effectiveness. This needs to be done within internationally agreed mechanisms (such as CAADP – see above).

22. Through observation of other sectors, such as health and education, it seems likely that distance learning approaches and making available open educational resources may well have a role to play in the agricultural sector.

23. The requirements for successful capacity development for agricultural scientific research and technology, development and training in Africa can be narrowed down to three key factors. Capacity development needs to be:

- long term,
- locally owned, both institutionally and politically, and
- with carefully focused and nuanced interventions that address real needs of farmers and others in agricultural value chains.

24. There needs to be an appropriate balance between capacity strengthening interventions targeted at the individual, organizational and institutional levels. In particular, where support for individual training is provided, this should be directly linked to the priorities of agricultural research and education organizations.

25. The SCARDA model has considerable merit and the project generated some very useful outcomes which are currently being documented and will shortly be
available on the following website: http://ruforum/a/scain. Examples of enhanced performance at the target organizations include an increased success rate in winning new research income; an increase in the number of research publications in peer-reviewed journals; the adoption of more efficient management tools and systems leading to savings in time and resources; stronger partnerships with other organizations in national agricultural research systems (in some cases leading to structural changes). However, a longer period of support is necessary to guarantee sustainable impact at the target organizations.

**How does the Government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight required?**

26. DFID commissions reviews of individual projects and programmes but it is not clear how these are consolidated at a higher strategic level – could this be an issue for the Independent Commission for Aid Impact to Consider? One challenge for all donors is the lack of well defined methodologies for assessing the outcomes and impacts of capacity strengthening. Because it takes time for measurable benefits to become apparent, and as attribution of effects is often difficult, donors do not give adequate attention to evaluating the effectiveness of capacity development. Additional investment in monitoring and evaluation of capacity building would be beneficial.

27. However, more generally DFID needs to recognise capacity building for science and technology in Africa as a key theme for its programme and thus need to have in place monitoring and evaluation processes to assess these issues. DFID urgently needs to develop a strategy on capacity building for scientific and technology in developing countries.

28. NRI is currently undertaking a systematic review of capacity building for DFID that will support such strategic developments.

**What role does DFID’s Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies?**

29. In the 1970s and 80s DFID was renowned for the quality of its in-house advisory cadre particularly in the area of agriculture, science and technology. Over recent years, this has been reduced, particularly in the DFID country offices and this change is arguably one of the prime causes for the absence of a clear strategy or view within DFID on capacity building for scientific and technology in developing countries. In this context, the role of a Chief Scientific Adviser becomes very important in determining priorities and in the development and assessment of capacity building policies. In this regard, it is noted that as a result of the S&T Committee’s 2004 inquiry the first DFID Chief Scientific Adviser was appointed as an independent external candidate.

30. The role of the DFID Chief Scientific Adviser is therefore of considerable importance in the development and assessment of capacity building policies and needs to be revisited. Of particular importance would be how such a post fits into the hierarchy of DFID’s management and whether the role can be made to have real influence.
How are government activities co-ordinated with the private and voluntary sectors?

31. The UK has a long and distinguished history in capacity building for science and technology in sub-Saharan Africa. Many UK research institutes and universities, including NRI, have had links and programmes with partner organisations in Africa going back half a century or more. The private and voluntary sectors also have such links but in many cases the expertise for this is derived from individuals with initial experience gained through contacts with publicly funded programmes at the research institutes and universities noted above. The acute reduction of DFID funds for such programmes over the last 20 years has meant that the pool of UK expertise with developing country knowledge in science and technology is diminishing rapidly through retirements, and is not being replenished by recruitment of new graduates. This affects the work of UK “plc” including the private and voluntary sectors in capacity building for science and technology in sub-Saharan Africa.

32. If the UK Government is concerned about the UK’s ability to assist in capacity building for science and technology in sub-Saharan Africa then it (and particularly DFID) needs urgently to consider the extent to which it is in the UK’s interest to maintain a minimum critical mass of expertise and knowledge of science and technology in sub-Saharan Africa in order to ensure it is an intelligent customer when providing development assistance in this area.

Other comments

33. The UK has a resource base of outstanding and world leading science and technology institutions. As has been explained above, these institutions have previously been funded by the UK Government in various ways to apply their expertise to help build the capacity of developing country institutions working in the field of agricultural science and technology, and thus play an important part in development. This approach has been largely discontinued and UK public funding is now primarily directed non-competitively to a number of international research institutes where the UK's S&T expertise is poorly represented. The EU, and indeed more recently the G20, is beginning to take a more coordinated approach to both a strategic vision for Africa’s science and technology needs, particularly in agriculture, and practical ways of building capacity in this regard. The UK Government should be actively participating in these discussions and advocating for the UK’s science and technology comparative advantage as appropriate – as for example is done very strongly by countries such as France and the USA.

Declaration of interest

The Natural Resources Institute of the University of Greenwich has received funding from DFID for capacity building initiatives.

Natural Resources Institute
University of Greenwich
16 December 2011
Written evidence submitted by The Royal Academy of Engineering, The Institution of Civil Engineers, and Engineers Against Poverty (Int Dev 29)

1. The Africa-UK Engineering for Development Partnership (A-UK Partnership)

This response has been prepared by The Royal Academy of Engineering on behalf of the A-UK Partnership, which brings together the UK and African engineering communities in a capacity building partnership. This response focuses on the experience of the key UK stakeholders involved in the A-UK Partnership: the Institution of Civil Engineers, Engineers Against Poverty and The Royal Academy of Engineering.

ICE, EAP and the Academy have all interacted with DFID over a period of several years. Whilst historically those interactions have taken place on a bilateral basis, over recent years and particularly since the establishment of the A-UK Partnership in 2008, the three organisations have sought to engage collectively with DFID, recognising the need for the UK engineering community to work in a joined-up fashion both with partners in developing countries and with other organisations in the field of international development.

It should be noted that ICE, EAP and the Academy have strong links to many other organisations with a stake in engineering and international development, including Engineers Without Borders, RedR, Association for Black Engineers (UK), other science and engineering professional bodies, and most of the major engineering companies with relevant activities. In a 2008 report by the Innovation, Universities, Science and Skills Committee, ‘Engineering: Turning Ideas into Reality’, the committee recommended that the Academy should be ‘the first port of call for engineering advice’.1 The Academy is committed to fulfilling its role in providing a coherent voice for the engineering community and is keen to work with DFID in this capacity.

2. Engineering and international development

Engineering has a necessary and central role to play in achieving the UN Millennium Development Goals (MDGs) and DFID needs to recognise this by building a prominent engineering element into its programmes. Engineering is critical to the development of, and provision of access to, new medical interventions, safe drinking water and sanitation facilities, sustainable energy generation technologies and other public services. Globally more than 2bn people lack access to safe drinking water, 2.5bn don’t have toilets or access to basic sanitation, while 2.3bn have no reliable source of energy.2 The World Food Programme estimates that up to half of global hunger could be due to transportation and storage problems.3 Through the provision of basic infrastructure, engineering provides the means to tackle these issues.

1 http://www.publications.parliament.uk/pa/cm200809/cmselect/cmdius/759/759.pdf
2 Ali H et al. ‘Engineering a Better World’: Conclusions from the Commonwealth Engineering Council and Institution of Civil Engineers 2010 Commonwealth Week Conference p3
3 Interview with Josette Sheeran, Executive Director, UN World Food Programme: http://www.foreignpolicy.com/articles/2008/04/22/seven_questions_the_silent_tsunami
Engineering is also a key enabler of wealth creation, both underpinning the innovation process and being necessary for building the infrastructure (physical and virtual) required for enterprises, supply chains and markets to function. Through these actions and, for example, its key role in manufacturing, engineering also provides a route to increased employment rates in developing countries.

Efforts to build engineering capacity could improve the sustainability of all DFID interventions by helping communities to develop the necessary skills and institutions to develop their economies, alleviate poverty and build political stability. Such efforts should be focussed on local and regional needs and should include building the capacity of professional, educational and governmental institutions as well as on developing the skills of individuals within the engineering sector.

3. UK Government support for scientific capacity building

Current DFID policy on scientific capacity building appears to be tightly focussed on research support. Increased funding for research within the DFID budget has been very welcome, however DFID could have more impact if it also funded scientific and engineering capacity building activities within professional, educational and governmental institutions. Educational institutions need to be able to provide students with skills that are relevant to local industry needs whilst governmental bodies must develop an understanding of the importance of engineering and must be able to engage effectively with the engineering community. Professional institutions require the capacity to develop and enforce professional qualifications\footnote{Lawless. ‘Numbers and Needs’: Addressing Imbalances in the Civil Engineering Profession. 2005}, to recognise education courses\footnote{Alutu & Iruansi. ‘Education and Development of the Structural Engineer in Nigeria: Some Gaps in the System’. 2008}, to support policy makers by providing expert advice and to promote engagement between government, industry, academia and civil society.

As engineering straddles DFID policy on both science and infrastructure, the lack of an up-to-date infrastructure strategy must significantly hamper progress for DFID programmes to build engineering capacity. The latest infrastructure strategy, Making Connections: Infrastructure for Poverty Reduction, was published in 2002 and a proposed new strategy in 2008 never materialised. A new infrastructure strategy is urgently needed in order to ensure that DFID policy is informed by changes that have occurred over the last decade, such as the growing importance of digital infrastructure to development.

4. Engaging within DFID on engineering capacity building

The engineering cadre within DFID appears to be of limited size, disconnected internally and not sufficiently well-connected with the UK engineering community. This limits DFID’s potential to harness the strengths of UK industry and academia for improving development outcomes as well as making it difficult for external stakeholders to engage with DFID on engineering issues.

Our own experiences of attempting to engage with DFID have been frustrating at times. Continual restructuring within DFID means that responsibility for projects changes frequently. This results in a lack of responsibility and continuity and makes it difficult for external stakeholders such as ourselves to engage effectively.
In many cases there appears to be a disconnection between DFID London HQ and country offices. In all but one case (in Tanzania) we have found it very difficult to identify appropriate contacts in country offices and met reluctance from those offices to engage with us. In some cases we were told that they aid the country through budget support and are therefore not interested in particular sectors but it would no doubt be beneficial for those offices to maintain their knowledge of development activities in all the sectors that they are supporting.

The drive for increased focus on evidence-based policy making by the previous and current DCSAs is very welcome. The Partnership is also supportive of the systematic reviews that the DCSA has initiated, although a more demand-led approach in which the intended consumers of the knowledge generated are more closely involved in the framing of questions could help to improve the impact of the reviews.

The Royal Academy of Engineering, The Institution of Civil Engineers, and Engineers Against Poverty
December 2011
Written evidence submitted by The Royal Society (Int Dev 30)

**Background:** In 2004, the Science & Technology Committee issued a report on “The use of Science in the UK international development policy”, identifying a number of concerns in the way DFID addressed capacity building in the developing world. The main issues that were raised, chimed with the concerns expressed by the Royal Society and other G8 academies on the donor’s lack of support for the institutions of higher education and research in the developing world, in the wake of the comments made at the 2005 G8 meeting at Gleneagles.

In 2009, the Society submitted a DFID consultation response on “Eliminating World Poverty: Assuring our Common Future”, highlighting the main issues for strengthening the educational and research base in developing countries. The seven points highlighted in this document were:

1. Need for investing in a strong and diverse higher education system at all levels.
2. Need for a demand-led research agenda driven by the developing countries.
3. Urgent need to improve in-country PhD training.
4. Lack of functioning post-doctoral research domain.
5. Lack of translational research.
6. Lack of linkage between researchers and institutions in and between developing countries.
7. Need to shift the focus of capacity building in Research & Technology from creating “centres of excellence” to a more realistic objective of developing “functioning institutions”.

We believe that the current consultation response need to be interpreted in the context of the above comments provided in 2009.

The views here reflect those of a select number of Fellows with experience in capacity building and working in, and with, developing countries. They do not necessarily reflect the views of the Royal Society.

**The Royal Society’s role in capacity building:** The Royal Society has endeavoured to address these major issues during the development of the Leverhulme - Royal Society Africa Awards. This funding scheme is based on consultation with science communities and institutions of higher education in Ghana and Tanzania. The research priority areas were defined by the recipient countries, and are linked to the wider developmental goals of the two nations. The consultation is a continuing process, mainly through regular award holder meetings co-organised with the national academies of Ghana and Tanzania. The first of these events held in 2010, resulted in the Royal Society’s successful submission of an application for a second phase of the scheme to the Leverhulme Trust, proposing a revised scheme design. For the next three rounds of applications, awards will provide additional ring-fenced support for a PhD student, who has to be registered at a university in Ghana or Tanzania, as well as the inclusion of an optional South-South collaboration component. In the context of the Leverhulme - Royal Society Africa Awards, the Society will be looking more closely over the next few years at developing a strategy for an incremental transition, during which resources provided through the Society’s programmes will be increasingly replaced by indigenous investments.

The Society is currently in discussions with DFID to explore the possibility of establishing a programme to support research consortia across sub-Saharan Africa.

The Royal Society has also partnered with Pfizer and NASAC (Network of African Science Academies) to support capacity building in Africa through the Pfizer African Academies Programme. The Royal Society plays a mentoring and support role to the national science academies in Tanzania, Ghana and Ethiopia in order to help build their capacity to influence policy makers; communicate science effectively to wide constituencies (including funders); inspire the next generation of scientists; collaborate regionally and internationally; and ensure the quality of science in their respective countries. These themes reflect the role of a modern national science academy in recognising, promoting and supporting high quality science and encouraging its use in public policy. Bespoke business plans have been developed.
in partnership with the academies to reflect their different stages of development and their own respective priorities. By developing these capacities, the Academies have an important role to play in demonstrating the value of investment in science and innovation, and creating an in-country demand for it. The first National Science Congress in Ethiopia in December 2011 perhaps demonstrates the progress we have been able to make in working closely with the Ethiopian Academy and its dynamic research community. The Society is currently designing a second phase of this work, building on progress to-date and working more strategically with NASAC, as well as helping academies to engage with wider regional and continental bodies in Africa, in order to leverage resource and influence.

**Science & Technology Committee consultation:** In order to formulate an official response, the Society has consulted with number of experts, the majority of whom are Fellows of the Royal Society:

1. Prof Martyn Poliakov FRS, Foreign Secretary of the Royal Society and University of Nottingham
2. Prof Tony Cheetham FRS, University of Cambridge
3. Prof Brian Greenwood FRS, London School of Hygiene & Tropical Medicine
4. Prof John Pickett FRS, Rothamsted Research
5. Prof Richard Catlow FRS, UCL
6. Prof Paul O’Brien FRSC, University of Manchester

**Terms of Reference of the Inquiry:** Referring back to the Committee’s 2004 report on “The Use of Science in the UK International Development Policy”, submissions of comments on five matters have been invited. The Society will not be able to respond to all of the questions, others can only be partially addressed. In the following, some aspects have collated, which might be relevant to address at least some of the matters arising. Our comments should be viewed in the light of the fact that the Royal Society’s contact with leading scientists in the developing countries indicates that DFID’s support is widely appreciated and valued:

1. **How does the government support scientific capacity building in developing countries and how should it improve?** There are a number of ways, in which the government is currently supporting capacity building efforts. Amongst them are the MRC centres and units in the Gambia and Uganda, collaborations between DFID and certain research councils (MRC and BBSRC) on health and agricultural research, support for the Commonwealth Scholarship programme and such like. Other successful initiatives supported by DFID are the direct funding provided for the CGIAR system and other institutes working collaboratively with national programmes, thereby providing core funding for this purpose. However, several of those consulted felt that some of the research funded directly by DFID has been less effective in creating successful capacity building programmes, mainly due to a lack of adequate quality control. One of the main difficulties is that DFID has lost many of those in its workforce with the adequate qualifications to operate and deliver scientific programmes. DFID needs to improve its research management as well as considering the option of outsourcing specific programmes to agencies with the adequate skills to deliver such programmes. In addition, in the past, the inclusion of Science & Technology into poverty reduction strategies was significantly hampered by the strict interpretation of the Millennium Development Goals (MDGs). This strict adherence to the MDGs should be reviewed, as there is a need for a stronger emphasis on S&T in the overall strategy of poverty reduction, and there is an urgent need to develop new mechanisms to target younger talented researchers working or thinking of returning to institutes of higher education, especially in sub-Saharan Africa. In addition, the consulted Fellows felt that special attention should be paid to significantly improving PhD programmes at universities in developing country, encouraging a tradition of post-doctoral research, and improving the overall quality of teaching and research. Selected universities and research centres in developing countries should be encouraged to become centres of excellence that can compete on the world stage. However, it is important to help existing institutions to develop to the stage where they can support the broader research needs of their country and act as a source of outstanding scientists who will become key members of the centres of excellence. The support should not be restricted to adaptation of existing technology platforms, but should also aim to develop an indigenous research portfolio. In the past, one issue that has rarely been address successfully is that of sustainability. More attention should be paid to succession planning; long-term strategies need to be developed
to enable national institutions to gradually take over responsibilities of providing improved (ad hoc) funding for researchers in their own countries. We are encouraged that DFID, in partnership with the Wellcome Trust, is engaging in supporting the development of funding bodies in Kenya and Malawi, but such activities need to be expanded to other countries. In addition, if DFID were faced with limited capabilities of managing capacity building programmes, one possible solution, at least in the short-term, would be for DFID to enter into partnerships with other organisation, which are better positioned to deliver particular projects within a wider DFID strategy of capacity building. This is important, because there appears to be an increasing willingness on DFID’s part to recognise the importance of capacity building in the higher education sector of developing countries, and the need for Science & Technology in the context of poverty reduction. There would also be merit in helping policy-makers in target countries to recognise the value of national investment in science, technology, and innovation, and to encourage them to use science to inform policy, i.e. creating an in-country demand or appetite for science and its application.

2. What are the most effective models and mechanisms for supporting research capacity in developing countries? There is no particular single model available, neither tested or as a concept, that would provide the best mechanism of building capacity. In fact, one of the major current challenges is to develop novel strategies to successfully assist developing countries in their efforts to build their own capacity in higher education, research, research training, and innovation. The most promising scenario will be one in which several models are created, and evaluated over the next decade. However, there needs to be a set of principles guiding all organisations engaged in capacity building (resonating with the Five Principles of the Paris Declaration):

a. Agenda setting by the South, and a programme that is demand-driven.

b. Safeguards to avoid dominance of one partner, especially the Northern partner.

c. Definition of clear objectives against which the success of a programme can be measured.

d. Integration of evaluation into the programme at the outset of every project.

e. Development of an overarching evaluation framework, to provide compatible data derived from different programmes.

f. Long-term commitment.

g. Acceptance that a programme needs to be repeatedly adjusted during its life-span, based on consultation with recipient countries, to react to a changing historical context.

h. Succession planning to be an integral part of the initial concept of any new capacity building programme; this requires a clearer definition of the role of the recipient partner and (agreed) mechanisms for holding the partner accountable to the agreed contributions (i.e. a stronger onus on recipients, e.g. as part of the Paris Declaration to mobilise indigenous resources to sustain programmes following the end of external funding).

In the context of capacity building of Science & Technology, those consulted believe that the focus should be placed on the following issues to maximise the long-term benefits of the investments:

i. Assistance in strengthening the quality of in-country PhD programmes.

j. Assistance in the development of career structures at HEIs and strategies for the retention/recruitment of younger scientists.

k. Assistance in the development of the post-doctoral research domain including the provision of a career structure.

l. Support for infrastructure (plus maintenance), but accompanied by the necessary training for researchers and technicians to use the equipment adequately and professionally (skill transfer).

m. Facilitation of the integration of African scientists into the global scientific community.

n. Inclusion of vocational training elements through skill transfer (seminars and workshops on grant-writing, training for senior researchers on the supervision and mentorship of graduate students and post-doctoral researchers, etc.).

o. Support of indigenous institutions to develop national merit-based ad hoc funding programmes.
p. Institutional support for the national funding bodies in terms management of scientific programmes, governance, accounting and reporting.
q. Institutional support for organisations that promote science and its application, and in doing so create an in-country demand for it.

The UK has also to ensure that its own institutions retain and develop their own capacity to engage successfully and efficiently in capacity building. One option could be to establish UK centres, focussing on specific research areas that could provide training through summer schools, workshops, and exchange programmes with partners in developing countries. In addition, a programme to support short visits by UK-based scientists to lecture in developing countries, could yield significant returns.

3. How does government monitor and evaluate the effectiveness of the scientific capacity building activities it supports? Is further assessment or oversight needed? The Society cannot provide a comprehensive response to these questions. There is a sense that, in the past, there have been shortcomings in the DFID approach to the issue of evaluation. However, it appears that DFID is becoming increasingly aware of the necessity of robust and effective evaluation tools. The main challenge is how to develop an evaluation programme that can be used across different capacity building programmes to produce compatible data, and to identify indicators that can be used as predictors. In this way donors and funding bodies can detect problems, and undertake course corrections during the lifespan of a programme, rather than just using evaluation as a “post-mortem” device.

4. What role does the DFID’s Chief Scientific Adviser play in determining priorities and in the development and assessment of capacity building policies? The Society does not feel in the position to comment on this matter, other than to note that it welcomes the decision of DFID to appoint a CSA who has been provided with the actual power and resources to formulate and deliver capacity building programmes, by combining the important role of CSA with the post of Director Research and Evidence Division. The Society has noticed a growing readiness by the CSA to recognise the value of Science & Technology and to put a stronger emphasis on capacity building in this area in the future. It is pivotal that the CSA engages with the DFID Scientific Advisory Board led by Prof Sir Leszek Borysiewicz FRS to create an effective two-way dialogue.

5. How are government activities co-ordinated with the private and voluntary sectors? The Society is again not in a position to address this matter comprehensively. One issue that needs to be address is the possibility of DFID entering into partnerships with organisations such as the Royal Society to deliver specific capacity building projects as part of DFID’s overall strategy and ambition, particularly in cases where DFID’s current in-house capability might be insufficient to manage certain projects directly. In the context of capacity building, DFID is already delivering certain programmes in collaboration with other funding bodies, for example with the MRC, BBSRC, and the Wellcome Trust. One issue of concern is the lack of co-ordination and perhaps governance of the many initiatives managed by the private and voluntary sector. There appears to be an overall lack of leadership by government to harness the undoubted enthusiasm and resources within this sector to increase the effectiveness of the assistance offered.

The Royal Society
December 2011
Written evidence submitted by the Overseas Development Institute (Int Dev 31)

Introduction

1. We would like to thank the committee for inviting us to prepare a formal submission to this inquiry; in which we outline issues that have arisen since the initial terms of reference were issued and which we believe are important to the committee’s deliberations. We have had the opportunity to read through the written submissions that have already been received, and agree with many of the points made. Our focus for this submission is on how science can influence policy with reference to the whole system of generating and using knowledge.

2. While a focus on building scientific research capacity will help address issues of market failure in the provision of science as a public good, this is not the whole picture. Science is a public good in its own right, but it is also a means to help deliver other public goods such as a cleaner environment, improved health, better education, broad-based economic development and improving trust between citizens and their government.

3. Developing capacities to ensure that scientific research is used to deliver these wider public goods via the policymaking process means looking at the system as a whole (drawing on approaches like Innovations Systems (IS)) but also paying attention to specific parts of the system namely:

   • strengthening and systematising policymakers’ demand for science by equipping them with the tools and methods to be able to procure and use science cost-effectively;
   • adding value to scientific research by ensuring its implications are well understood and embedded in broader policy processes;
   • recognising the central importance of intermediary organisations which facilitate policy debates and convey narratives around science.

4. Building capacity is a not a straightforward process and doing so successfully requires long term commitment, a systemic approach, innovation and a high level of professional rigour. We elaborate on these points below.

Taking a ‘whole systems’ approach in delivering policy goals

Why this is important

5. The simple linear model, where research results are disseminated to target audiences who assimilate this new knowledge and act upon it, is too simplistic (Barnard, et al., 2006). Scientific research is clearly just one of many competing factors influencing policy decisions and changes in practice (see Court, et al., 2004 and Young and Mendizabal 2009). Decisions about how to use science to deliver wider public goods are intimately bound up with the policymaking process in a reflexive and complex set of relationships (see Jones, 2011; Ramalingam, et al., 2008). As such there is a real need to understand and focus on the processes and drivers behind the use and uptake of new or existing knowledge. The RAPID framework\(^1\), for instance, identifies four groups of factors that shape the science-policy interface: the political context, the nature of the evidence, the mechanisms which link evidence with policy processes, and external influences.

6. Such whole system approaches have been taken up by a number of initiatives developing research capacity. DFID has funded the Research into Use (RIU) programme which aimed

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\(^1\) See [http://wwwodiorguk/rapidtools/Documents/Frameworkpdf](http://wwwodiorguk/rapidtools/Documents/Frameworkpdf) for more information
to contribute to sustainable agriculture in South Asia and sub-Saharan Africa by adopting a pro-poor ‘whole system’ or, in this case, Innovation Systems (IS) approach to getting (DFID-funded Natural resources-related) research into use and to increasing the understanding of how this is done. An innovation system is a network of organisations and individuals – comprising knowledge users, producers and intermediaries (at national, sub-national, regional and/or international level) involved in generating, modifying and using new knowledge. The IS approach considers not only the totality of the entire research, development and extension spectrum, but also the institutions, systems of production, and social relations in which these activities take place (Clark 2010).

7. In Indonesia, AusAID is about to launch an almost two decade long AUS$ 300 million programme to develop what they call the country’s ‘knowledge sector’. The Programme’s “knowledge to policy” model contains four inter-connected pillars, each of which will be supported through this program: 1) research organisations that produce knowledge and evidence that influence policies; 2) policy makers who demand and use evidence in formulating policies; 3) intermediary functions and bodies that translate, package, and communicate knowledge and; 4) the enabling environment – the policies, regulations, and procedures that govern how the supply and demand sides operate and interact (AusAID, 2011).

Implications for DFID

8. As Jones, et al. (2009) suggest, taking a whole systems approach emphasises:

- not just the supply but also the demand for knowledge (including scientific research) and the need to strengthen this demand by amplifying the voice of knowledge users (such as farmers, small and medium sized enterprises as well as policymakers) and providing knowledge services;
- the importance of different types of knowledge (beyond scientific research to include citizen or stakeholder evidence and evidence from practice);
- that often structural factors and national context, such as the social value placed on ‘policy entrepreneurship’ or the strength of basic infrastructure, can shape the use of knowledge;
- the importance of networks and linkages as channels for increasing the role of knowledge in policy and practice and the need to facilitate trust and interaction between a diverse range of actors and;
- the need for actors carrying out ‘intermediary functions’ to facilitate continuous exchange between the ‘supply’ and ‘demand’ for knowledge.

9. There is a widespread belief that the blockages to using science effectively in policymaking arise because of barriers within government that can be overcome with more or better science, or more or better communication. A whole systems approach demonstrates the importance of conducting early and thorough diagnoses of the system to identify the weak points in both supply and demand.

Supporting decision makers to demand and make use of scientific research

Why this is important

10. Strengthening the demand for science by policymakers has received relatively little attention internationally: while there has been a great deal of work internationally on strengthening the supply of science to policy via academia, think tanks and other organisations, considerably less has been done to help developing country policymakers understand how to use science and other forms of evidence effectively.
11. It is not enough for policymakers to use science instrumentally. Promoting better governance means helping to align policymakers’ incentives to use science with the policy goals they are charged with delivering in a set of robust and transparent decision-making processes. If an impact assessment is just a tick-box affair there is very little incentive for policymakers to seek out evidence to answer the questions. Likewise, strategy development processes may be purely about negotiating policy positions without reference to what the evidence says, and budgeting processes may be simply an accounting exercise rather than a systematic effort to underpin policy priorities with the necessary resources.

12. There is also an important set of questions relating to how cost-effectively science is procured and used to inform policy: specifically how the budgets at the disposal of government departments are used to procure scientific research for policymaking. For the purposes of this enquiry, we include donor-funded projects in the definition, as developing country governments, particularly those with low incomes, generally have minimal budgets for procuring science themselves and often rely on external funders to deliver what they need.

13. Lessons from Whitehall show the importance of developing a clear line of sight between policy goals and the science base to ensure that government budgets spent on science are focused on delivering those goals cost-effectively. This is perhaps best exemplified by the Department for Environment, Food and Rural Affairs (Defra)’s Evidence Investment Strategy process².

14. Strengthening policymaking processes such as these helps make the procurement and use of science more cost-effective. It also contributes to the good governance agenda; improving the effectiveness of policymaking processes by ensuring that the business processes of government departments (strategy, planning, budgeting, options appraisal, citizen engagement and monitoring) actively encourage policymakers to seek out evidence in a structured and systematic way (see for example Hallsworth & Rutter, 2011 and Laughrin, 2011). In addition, clarifying policy’s needs for science helps create a ‘demand-pull’ on the science base, aligning incentives to supply science with demand from government.

15. This on its own is not enough, however. It is also important to build policymakers’ own capacity to articulate their science needs to researchers more effectively and systematically; to help them understand the scientific process, recognise good and bad science, and know how to deal with uncertainty in the science base.

Implications for DFID

16. More systematic and political analyses of policy processes would help identify the different actors or stakeholders involved and understand how their interests and perspectives influence the ways they use scientific research, or not. This can help inform knowledge-to-policy programming – allowing DFID to identify key entry points to help partner governments ensure that policy processes engage more widely and draw on multiple types of knowledge (see for example Datta et al, 2011; Jones et al, forthcoming 2012).

17. We believe that some of the best examples of tools to systemise demand are to be found in Whitehall, for example in the Government Chief Scientific Adviser (GCSA)’s Guidelines on the Use of Scientific and Engineering Advice in Government³ and the work on Evidence Strategies that has been done by Defra and other departments (referenced above). While more needs to be done to determine the extent to which this Anglo-Saxon model of evidence-based policymaking is truly relevant to other countries and cultures, we believe there would be merit in:

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³ [http://www.bis.gov.uk/assets/bispartners/goscience/docs/q/10-669-qcsa-guidelines-scientific-engineering-advice-policy-making.pdf](http://www.bis.gov.uk/assets/bispartners/goscience/docs/q/10-669-qcsa-guidelines-scientific-engineering-advice-policy-making.pdf)
• seeking to adapt the GCSA guidelines to country-specific circumstances. While we recognise that there are substantial differences in the capacity of Whitehall and developing country departments, the GCSA principles are equally relevant. The process of producing country-specific guidelines would help identify where the particular science-related weaknesses are inside departments and help focus efforts to strengthen them;

• draw lessons from the work in Whitehall to develop evidence investment strategies, to begin the process of stimulating and systematising the demand for science and other forms of evidence by policymakers. As we note above, this would speak to the twin agendas of value for money and good governance;

• support techniques which encourage policymakers to think ahead, help them consider what evidence they need to future-proof policies and strategies, and explore future risks and opportunities and;

• consider support to programmes like the Canadian Health Services Research Foundation (CHSRF)’s Executive Training for Research Application (EXTRA) program which develops capacity and leadership to optimize the use of research evidence in managing Canadian healthcare organizations.4

18. Strengthening and systematising the demand for science and other forms of evidence in policymaking is a long-term process, but we believe there are sufficient examples of good practice in the UK that could be adapted to the different realities of developing country governments.

Adding value to scientific research by strengthening science-policy dialogue

Why is this important

19. Communication is fundamental to science’s ability to make a meaningful difference to policymaking processes. But improving science communication is not simply an issue of marketing the results of scientific research by for instance, producing policy briefs and working papers, or targeting key decision-makers with information. As indicated above, good communication can create the conditions for, facilitating dialogue among and, critically engaging with, key policy actors (including citizens as well as scientists and policymakers) to improve the rigour and quality of policymaking. For instance, scientific research is more likely to be integrated into policy if policymakers (and other users) are consulted about their views and priorities at the outset of a research project, rather than presented with a completed research report over which they have little sense of ownership (Jones, et al., 2009). Such dialogue can:

• help policymakers who are not technical specialists understand the results of complex scientific processes and their relevance to current policy priorities;

• help policymakers understand how to recognise good and bad science, the implications of scientific uncertainty and translate this into a better appreciation of how to deal with risk;

• alert policymakers to the possible implications of new and emerging evidence and to engage widely and openly about the implications, such as upstream public engagement work on nanotechnologies (see, for instance, Datta, 2011);

• amplify the voices of knowledge users, such as farmers, and owners of small and medium-sized enterprises (SME), and provide knowledge services to strengthen them and;

4 http://www.chsrf.ca/Programs/EXTRA/about_extra.aspx
• ensure that messages from science are delivered in a timely way, anticipating policy’s likely needs for information or responding to them as rapidly as possible

20. In Peru, for instance, the Consorcio de Investigación Económica y Social (CIES) (Economic and Social Research Consortium)—a Peruvian umbrella organisation with 44 institutional members, including think tanks, research centres, NGOs, private consultancies and public agencies - designed its research awards around the knowledge demands (i.e. a research agenda) outlined by the Public Sector Consultative Group (PSCG) made up of government, the Central Bank, regulatory entities and Parliament (Jones, et al., 2009).

21. In another example, a deliberative citizens’ jury on food and farming futures in Zimbabwe convened by a group of actors including a government agency (overseen by a panel of senior officials from the Ministry of Land and Agriculture) enabled an information exchange amongst farmers, scientists and policymakers on what stakeholders wanted to see in the smallholder agricultural sector in Zimbabwe by 2010 (Rusike, 2005).

Implications for DFID

22. DFID has led the way internationally in ensuring that sufficient attention is paid to communicating the results of scientific research to policymakers, stipulating that research projects and programmes actively consider communications from the outset, through its policy of 10% minimum spend on communications within RPCs and requiring each one to produce a strategy to show how research would be put into use; providing web portals such as Research for Development (http://www.dfid.gov.uk/r4d/); bringing international groups of researchers together to discuss how to improve the impact of scientific research on policy (see Shaxson, 2010) and reviewing the impact of its research communication spend (see Hovland, et al., 2008).

23. While the past decade of DFID-funded work has given the international community a real appreciation of the need to think systematically and rigorously about how to communicate science to policy, more work still needs to be done to understand the impact of different research communication strategies and the wider public value they ultimately add to scientific research. The evaluation of DFID’s policy of a minimum spend on communications in RPCs suggested they continue with this policy, increase the threshold to 15 % for future rounds, provide more practical support to RPCs in implementing the communications policy and fund cutting edge research on research communication (Hovland, et al., 2008). The current moratorium on communications and marketing spend by Whitehall departments has had an unfortunate impact on funding for communicating scientific research to policymakers, because research communications (to facilitate policy dialogue) has been conflated with central communications (to ‘sell’ the DFID message). Should this continue, it will have significant impacts on the value that can be added to DFID-funded research.

Working with intermediaries to facilitate the interpretation and use of science

Why is this important

24. There are limits to what individual research centres can achieve on their own, particularly smaller organisations that operate outside the traditional academic environment (as noted by the STEPS Centre’s points about citizen science). The importance of creating networks and linkages as channels for increasing the uptake of knowledge, and the need to facilitate trust and interaction between a diverse range of actors is now well recognised.

25. The print, broadcast and online media have to some extent facilitated this interaction, by publicising and critiquing research findings, promoting and widening debate, and demanding accountability. But spurred on by rapid developments in information and communication technologies over the last decade (particularly the development of web-based tools, social media and smart phones), these roles are increasingly being played by other intermediaries; ones who do more than simply transmit information. Instead they
contribute to interpreting information, creating new knowledge and fostering social learning and innovation in a variety of ways by, for instance, by strengthening relationships and networks of actors or contributing to collective engagement around an issue.

26. These intermediaries can sit outside government (such as prominent academics and communication specialists within universities, networks - enabling collaboration beyond the usual institutional, cultural, and functional boundaries of an organization, think tanks and civil society organisations), inside government (such as strategy units and evidence teams) or somewhere in between (high level commissions, science advisory councils and legislative committees). Given the growing importance of legislatures in many developing countries, supporting the knowledge requirements of legislative committees in particular could help them fulfil their oversight function more effectively and drive up the quality of policymaking (see, for instance, Datta & Jones, 2011 for legislator-research linkages).

27. Examples include, Jean Drèze, a development economist who has been influential in Indian economic policymaking particularly on issues of hunger, gender inequality, child health and education. He helped conceptualise and draft the first version of the National Rural Employment Guarantee Act (NREGA) (Datta & Mendizabal, forthcoming 2012). The African Centre for Economic Transformation (ACET) is a think tank which was established in 2007 to provide policy analysis and advice to African governments. It is unique in that it champions an African perspective, harnesses African talent from within the continent and from its diaspora, and draws on a network of international experts and preeminent African professionals (Datta & Young, 2011). The Vietnam Economic Research Network (VERN) – a community of young researchers formed to address inadequate capacities of existing research organisations - works with both government and legislative committees to develop policy options in a range of social and economic policy areas.

28. The Inter-Agency Network for Education in Emergencies was established in 2000 after it was realised that humanitarian emergencies were an obstacle to the fulfilment of the global commitment to ‘Education for All’. The network created a great deal of value through collective action in formal and self-organising groups of representatives from aid agencies engaged in producing, translating and sharing knowledge; successfully advocated for more attention to education in emergencies; and provided training and advice on minimum standards (Mendizabal & Hearn, 2009).

29. Several large scale initiatives have aimed to fund and support intermediaries to improve policymaking processes. The ODI managed Mwanainche programme aims to build the capacity of key interlocutors such as the media and civil society organisations, but also government departments, in improving state-citizen relations in several African countries. The African Capacity Building Foundation (ACBF) helped to establish and support economic oriented government and non-government policy think tanks in sub-Saharan Africa and established 12 national and regional knowledge networks. These helped raise awareness among policymakers of the need for more evidence-informed policymaking, and many of the organisations won a visible and credible voice in their country’s policy discourse (Daima Associates, 2006 in Datta & Mendizabal, 2008). The Think Tank Initiative (TTI), which DFID is contributing to, has provided core budget support to 51 think tanks across the developing world to help them improve their research and engagement work as well as their organisational structures.

30. In an increasingly interconnected world, actors are increasingly joining forces in partnerships and networks that cut across national boundaries to generate and use knowledge more systematically to address regional and global challenges. The Climate and Development Knowledge Network (CDKN) for instance, is a large-scale global alliance of Northern and Southern private and non-governmental organizations working to support decision makers in designing and delivering climate compatible development (Datta & Young, 2011).

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5 See http://www.mwananchi-africa.org/
6 http://www.idrc.ca/EN/Programs/Social_and_Economic_Policy/Think_Tank_Initiative/Pages/About.aspx
Implications for DFID
31. Visualising science and policy as separate communities does not help efforts to make science meaningful to developing country policymakers. DFID could perhaps do more to recognise that intermediary organisations take various forms and can play a wide range of roles. This includes support to different types of knowledge intermediary (such as policymaker or issue based networks) to work in ways that are more tailored to different contexts and would help foster wider engagement around science in general.

Building capacity for lasting solutions

Why is this important
32. An assessment of the research environment in Africa commissioned by DFID and conducted by ODI suggested that capacity building should not be viewed as a simple add-on to existing initiatives (Jones and Young 2007). Capacity is a multidimensional concept; building it can lead to outcomes that are not initially obvious or clearly attributable. It is an inherently political task which requires long term commitment, a systemic approach and a high degree of flexibility.

33. Approaches focussed on single entities have tended be limited in their impact as they do not deal sufficiently well with actors and their relations with one another. Hence, capacity development needs to focus not just on the capacities needed to achieve technical results such as knowing how to communicate research to non-specialists, but also on what it takes to build more effective and dynamic relationships between different actors - such as scientists, policymakers and intermediaries - within a system (be it an organisation, a sector or a country).

34. Promoting capacity development can be a difficult process: it needs an appreciation of many domains of knowledge and disciplines including organizational development and management science; multi-stakeholder processes, related insights from social and political science; behavioural psychology and others. Like doctors and teachers, an understanding of these issues is not necessarily brought about through formal teaching processes. Field experience is also crucial, through for instance, immersion in context and learning by doing (Datta, et al., forthcoming).

35. Capacity development services are often overseen by Northern based organisations with local capacity development providers, although growing in number, still playing a marginal role. While foreign organisations may have staff with excellent technical skills, they often lack for instance, an in depth understanding of the local context and cultural sensitivities; are unable to speak the local languages; or may be unfamiliar with professional, formal and informal networks. Moreover, Northern consultants building capacities of Southern organisations, can, if not carefully managed, reinforce existing power and knowledge asymmetries.

Implications for DFID
36. Given the complex and multidimensional nature of human systems, building capacity effectively would involve:

- promoting ownership of strategies: locally designed and monitored and context-specific capacity building initiatives can help to ensure their sustainability;
- delivering long term and flexible support: long-term core funding and providing space to local organisations to deliver what they think is needed (drawing on both conventional and advanced approaches) when they think its required can help them respond to complex and changing organisational and environmental contexts;

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7 http://www.snvworld.org/en/ourwork/Pages/LCDF.aspx
• encouraging the growth and development of national (and sub-national) level capacity development service providers (such as civil society and consultancy organisations) and promoting South-South learning/collaboration;

• encouraging higher levels of professional rigour and innovation amongst those who manage and implement capacity development programmes through for instance, support to more and better development and learning opportunities, communities of practice, ensuring minimum professional standards and more information for local organisations about the kinds of solutions and support available.

Conclusion

37. There is a real need to take a whole systems approach to developing capacity in producing and using scientific research. Within government this means being clear about what the policy goals are and being open about what science is needed to inform the policy development and delivery processes. Outside government, it means being clear where science has something to say about policy and engaging in a conversation with multiple stakeholders. This also requires a ‘brokering’ process to decide which of those messages are currently most useful, whether they challenge received wisdom, confirm what we think we know, explain complex relationships, enrich our understanding of an issue, or scope opportunities for policy change. As policy priorities shift and as new scientific information emerges, their implications have to be set in context of what policymakers are trying to deliver. And finally, capacity building in all these areas requires a long term, systemic and flexible approach rooted in local ownership.

Declaration of interests

The Overseas Development Institute is a UK based think tank working on international development and humanitarian issues. Its mission is to inspire and inform policy and practice which lead to the reduction of poverty, the alleviation of suffering and the achievement of sustainable livelihoods in developing countries. The ODI does this by combining applied research, practical policy advice, and policy-focused dissemination and debate. It works with partners in the public and private sectors, in both developing and developed countries.

ODI’s Research and Development programme (RAPID) works to understand the relationship between research, policy and practice across different contexts, exploring factors that may contribute to or limit the ability for knowledge to play a role in policy and practice. RAPID then uses insights from its research, learning and practical experiences to develop new competencies and skills in those wanting to use research evidence to influence and improve policies and practices. Given our remit, we have a keen interest in the findings of the Inquiry.

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On behalf of the RAPID Programme at the ODI

2nd February 2012

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