

# Royal Society Submission to the DFID Consultation “Eliminating World Poverty: Assuring our Common Future”

The Royal Society welcomes the opportunity to respond to UK’s Department for International Development’s (DFID) consultation on “Eliminating World Poverty: Assuring our Common Future”.

It is now recognised that science and innovation is not a luxury for developing countries but a necessary prerequisite for sustainable social and economic development. DFID should reinforce this message to key policy makers in both the UK and developing countries and also ensure that the new White Paper strongly reflects this fact. At the same time, the Society acknowledges the steps DFID are taking to include science, engineering technology and innovation (SET&I) in addressing the major challenges facing the world today, both in terms of its strategic framework and departmental infrastructure.

This document has been approved on behalf of the Council of the Royal Society by Professor Lorna Casselton FRS, Foreign Secretary and Vice-President. It has been prepared in consultation with Fellows of the Royal Society and other leading experts, and has drawn on our previous submission to DFID.

We have not directly addressed all the questions listed in the DFID consultation paper as some are beyond the remit of the Royal Society. Rather, we have provided a broad response that reiterates the value of SET&I in development and then addresses thematic areas in which we have considerable expertise including building a stronger educational and research base; tackling climate change; food security; and strengthening governance mechanisms. We would welcome the opportunity to discuss or expand on any or all of these areas if that would be helpful.

## Summary of Recommendations

- The Society urges DFID to support the **building of indigenous scientific capacity** in developing countries to meet **locally and regionally defined challenges**. This includes improving countries’ abilities to carry out their own research and make best use of existing research, whilst also increasing the voice of developing countries in global discussions of global issues. Creating an **environment conducive to research, and providing better training and continuing professional development** for young scientists must also be a key component of building scientific capacity. It should also include innovative policy measures for minimising the impact of brain drain.
- Whilst acknowledging the limitations of the MDGs with respect to higher education, teacher training and the skills agenda more broadly, the Society believes that **DFID should continue to cross-reference the new White Paper with the Millennium Development Goals (MDG) framework** where possible.
- The Society encourages DFID to support **processes that promote evidence-based policy making** that draw on the very best indigenous research expertise in-country and **underpin all of the key policy agendas** that affect the livelihoods of people.
- Responding to the key policy challenges of the future, including climate change, food security and renewable energy, requires **increased scientific literacy within governments** of developing countries, and improved capabilities of **civil society to hold government to account** for the

evidence base on which it makes decisions and would welcome the opportunity to work with DFID to advance this objective.

- Recognising that all of these challenges cannot be addressed in isolation, DFID should recognise the interconnectedness and interdependency of these challenges and **support the integration and coordination of interdisciplinary science and innovation-based research and modelling, and their role in influencing policy.**
- Helping developing countries **adapt to the effects of climate change** requires a significant **input of science and innovation**, combined with a major initiative to **build local science capacity**, through infrastructure, education and training. For **low carbon development, small and medium enterprises providing renewable energy** will need to be nurtured.
- To address **issues of food security**, much **greater international research investment** is required **to achieve higher productivity**, to discover and create new crops and to develop agricultural practices and crops that reduce the impact of agriculture on the environment. The Royal Society's study on food crop production will be launched in November this year, and will include recommendations in the developing country context and we would welcome the opportunity to discuss in more detail.
- DFID should **work more in partnership with other organisations that can offer expertise and experience** in developing programmes in particular areas. For example, the UK research councils and UK learned societies can contribute expertise on science, engineering, technology and innovation for development, as well as help build scientific literacy within DFID itself.

## **Introduction**

In the last few years, the global development agenda has begun to recognise the importance of science, technology and innovation. It is now acknowledged that science is not a luxury for developing countries but a necessary prerequisite for *sustainable* social and economic development. Investment in research has been shown to drive economic growth both in developed countries (a recent assessment of research investments in health identified annual rates of return of 39%<sup>1</sup>) and in the developing world: estimates of returns on agriculture research<sup>2</sup> are high (average 43%)<sup>3</sup>.

In addition to the economic benefits, science is a common public good and scientific progress is essential to address today's most pressing global challenges – climate change, food security, public health, renewable sources of energy. Every country will be affected by global financial, environmental and health pressures, yet only a small percentage of countries (representing a small percentage of the earth's natural resources – including its people) account for the vast majority of the world's research and development (R&D). There is significant opportunity for scientific engagement in the developing world to galvanise indigenous, and often unique, expertise to provide tailored solutions to problems at local and regional level, and at the same time to build capacity and capability in these countries. To fully exploit all that science and innovation can offer, developing countries need to build and sustain their own scientific capacity, both at the individual and at the institutional level. We will all benefit from a more prominent role for developing countries in the global research agenda and in strengthening the developing country perspective in the global policy debate.

The Royal Society therefore urges DFID to use the new White Paper as an opportunity to put SET&I at the heart of the development process. Whilst we acknowledge the increased engagement by DFID with the UK's science community, and international and developing country stakeholders in SET&I, we are concerned that the Consultation Document does not mention science, research, or the evidence base, which must surely be integral to realising its ambitious targets.

Similarly, the Society is concerned that the Millennium Development Goals (MDGs) also receive only nominal mention in the document. A decade ago, the UK Government committed itself to the MDGs as an important, reasonable and realistic framework within which development policy and priorities should be tailored. Whilst in many countries, the original target date of 2015 will be extremely difficult to achieve: a number of key elements remain crucially important and the Society believes that the MDG elements should remain central to DFID's day-to-day activities in the field.

At the same time, however, the specific targets set by the MDGs have shifted attention and donor funding away from other critically important development priorities. For example, with the MDGs putting focus and funding on primary education, many developing countries have poor secondary and higher education sectors, which, chronically neglected, are now under enormous pressure to cope with increasing demand and are unable to provide the quantity and quality of teaching staff at all levels of education.

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<sup>1</sup> Health Economics Research Group, Office of Health Economics, RAND Europe. Medical Research: What's it worth? Estimating the economic benefits from medical research in the UK. London: UK Evaluation Forum; 2008.

<sup>2</sup> Based on 700 rates of return on R&D and extension investments in developing countries across all regions

<sup>3</sup> World Development Report 2008: Agriculture for development, World Bank, 2008.

The Society would therefore encourage DFID to reassign focus to the MDGs but be cognisant that the targets do not encompass everything required for full and sustainable social and economic development, the framework having particular limitations with respect to higher education, teacher training and the skills agenda more broadly.

Within the White Paper, DFID should tailor support to the needs of the individual country. Developing countries are at differing levels of SET&I capability and assistance must be structured accordingly. Some countries like Mozambique have high quality detailed national Science and Technology strategies which the international community and DFID could provide assistance in implementing. Other countries have not developed a systematic SET&I linkage to poverty reduction and development and will need support and technical expertise to show how the SET&I capacity of a country can be matched with strategies for poverty alleviation.

The Society also stresses that the new White Paper should focus more on coordination of activities and working through partnerships. In order to work more effectively, with greater impact, and to maximise use of resources, co-ordination of activities with other donors is essential and requires regular communication. This needs to be done at both a regional and international level. We welcome DFID's initiatives to consult, liaise and partner with other donor organisations and we hope that DFID can work with other partners/agencies e.g. the UK Collaborative on Development Sciences (UKCDS) to build on existing coordination. In delivering this new strategy the Royal Society encourages DFID to further collaborate with partners that can bring experience of tailoring development programmes to particular contexts or niches. For example, the UK Research Councils and UK learned societies can contribute expertise on SET&I for development, as well as help build scientific literacy amongst DFID staff and associates.

The Consultation Document refers to the world as “more connected than ever before” and “more interdependent, with a shared environmental and natural resource dependency” but the document then seems to deal with the four priority areas in relative isolation. We would strongly encourage DFID to view these challenges as interconnected, and direct policy accordingly. From the point of view of the average person in rural Africa, it is the *combination* of events that leads to undesired outcomes (e.g. child-headed households; adolescent HIV; stigma; poor nutrition; lack of productive food gardens yielding cash crops; education; water and sanitation; malaria; TB; other infectious diseases; gender discrimination). A DFID paper that genuinely embraces this interconnectedness is crucial. Science and innovation must be an integral part of measures to tackle each of the challenges facing the world while *at the same time* reducing greenhouse gas emissions, reducing poverty, and conserving biodiversity. This theme of inter-relatedness should resonate right through the new White Paper.

### **The role of science policy in enabling good governance**

The correlation between extreme poverty and fragile, weak states is overwhelming, and DFID's suggestion of the need for a new approach to development assistance in these contexts is certainly welcome. Many of the policy levers for state building and good governance are beyond the expertise of the Royal Society. However, given the likelihood of global challenges such as climate change and food security exacerbating tensions in conflict-prone societies and amongst weak governments, we do believe there is a pressing need to promote greater science literacy and understanding within these states, and to ensure that science is seen as a key tool in development.

SET&I needs to permeate all government departments and be placed at the heart of the development process. Yet many governments of developing countries do not have a sufficient pool of people who have specialised skills in SET&I policy analysis, and despite growing acknowledgement of the role of science in development, corresponding allocation of resources and government commitment has been patchy, at best.

The Royal Society is keen to extend its work in the African region through new initiatives aimed at facilitating intelligent, evidence-based policy making that draws on the very best indigenous research expertise in country and underpins all of the key policy agendas that genuinely affect the livelihoods of people. Working in partnership with the Network of African Science Academies, the Royal Society Pfizer African Academies Programme aims to extend the broader skills base within scientific academies whilst also building vital policy links and understanding between institutions, scientists and policy makers. Another key priority of the programme is to build on the governance structures within the academies, with particular emphasis on the importance of accountability and transparency - e.g. in helping to improve the "voice" of civil society as well as improving - and holding to task - the evidence base on which governments make decisions. By improving the transparency of the decision-making process, we aim to increase public confidence and participation in decision making, and mitigate against conflicts over controversial topics.

Whilst only a modest programme, we have been careful to learn from the experiences of other similar initiatives to ensure best practice and avoid duplication. The US' National Academy of Science's African Science Academies Development Initiative<sup>4</sup> is another project in place to help strengthen the role of academies to provide science advice to their governments. Both programmes deliberately target different countries, and we are increasingly working together to share experiences and collaborate so as to achieve effective economies of scale. We believe that there is significant merit in DFID engaging with this Royal Society initiative to promote the value of independent, evidence-based policy advice to government, and would welcome the opportunity to explore how this programme could advance and extend other initiatives aimed at improving and promoting good governance in developing countries.

Another avenue to improve dialogue and understanding between scientists and policy makers is through MP-Scientist Pairing Schemes. The Royal Society, in partnership with the Parliamentary Office of Science and Technology, has successfully piloted in Kenya and Uganda MP-Scientist Pairing Schemes<sup>5</sup> aimed to highlight the importance of science and technology for development and the need for policy makers, including MPs, to be provided with impartial and sound scientific information and advice. As part of these pairing scheme researchers spent time shadowing MPs in Parliament and visiting their constituencies and the MPs visited the researchers' workplaces. This exposes MPs and researchers to the constraints under which each operates and provides new channels for information to flow between researchers and MPs. Such schemes have proven to be extremely popular. In Uganda, for example, the scheme has facilitated a stronger relationship between the government and the indigenous scientific community, with the latter now asked to contribute to and advise the parliamentary committee of science and technology which previously worked in isolation. The scheme is now so popular in Uganda that it is over-subscribed and additional funds are being sort to extend the scheme both from the Ugandan Government and other funding agencies such as the Wellcome Trust.

Both of these initiatives are modest in scale and therefore limited in their country reach, but their potential to assist in building stronger, more accountable governance structures are significant. DFID are invited to join

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<sup>4</sup> For more information see <http://www.nationalacademies.org/asadi/>

<sup>5</sup> For more information on the African MP-Scientist Pairing schemes please contact [ian.thornton@royalsociety.org](mailto:ian.thornton@royalsociety.org)

the Society in these schemes, and the funding provided could dramatically scale up and or build on the schemes we have piloted.

### **Building a stronger educational research base for sustainable economic and social development**

Since the mid-eighties most donors have significantly decreased their support for Higher Education (HE) in the developing world, based on the belief that the social returns from investments in primary education were much higher than returns for HE. As a consequence, this sector was unfortunately excluded from poverty reduction strategies. In past years, however, this trend has been reversed to some extent, as new information shows that the perceived social return appears to be much higher than originally thought. A flourishing HE system is an integral part of the transition to a knowledge-based society, and DFID has a role to play in helping developing countries realise the value of investing in a more holistic educational infrastructure to fuel their economic development.

We have identified a number of issues that we feel need to be addressed by DFID and others:

1. *Investing in a strong and diverse higher education system at all levels:* There is a pressing need for agencies such as DFID to emphasize the importance of investing in higher education facilities as an integral ingredient in developing the skills base required to stimulate a country's long-term economic development. In this regard, assistance in the design, creation and/or enhancement of higher education systems which provide both teaching and research across all levels would be of significant long-term value.
2. *Research agenda driven by the developing countries:* It is essential that stakeholders in the developing world identify their own priority areas of research in any international partnerships aimed at strengthening the research and training capacity at the institutional level so as to maximise local engagement and relevance of such work to that country's priorities.
3. *PhD training:* While there are innovative ways for PhD students from resource-poor countries to receive training (sandwich courses, distance learning, remote mentoring), it is ultimately important that the HE systems of these countries are strengthened in their capacity to train sufficient numbers of students to the PhD level. It is not enough to simply build research capacity without enabling HE institutions to produce the numbers of students trained to the PhD level required to make this sustainable. Within PhD training, the lack of supervision, adequate mentoring and institutional support is a major concern.
4. *Lack of a functioning post-doctoral research domain:* Any HE system needs to develop a strong and sustainable post-doctoral research environment to compete globally in the science arena (attracting additional funding, producing scientific knowledge, training a scientifically skilled workforce). Current post-doctoral training in many countries is totally inadequate. Partnerships between UK researchers and institutions with counterparts in developing countries could greatly assist in improving the research and training capabilities of local HE institutions.
5. *Lack of translational research:* Too little attention is given to the translation or adaptation of existing knowledge and technical platforms to deal with local issues in developing countries. UK - developing country research partnerships could help alleviate this problem. Developing countries have specific needs to develop products that are adequate for their situation, for example developing simple and cost-effective medical diagnostic tools not require cold storage. Assisting in connecting academia with the private sector would vastly improve many public service areas such as health care delivery.

6. *Linkage between researchers and institutions in and between developing countries*: The research communities in regions like sub-Saharan Africa are currently fragmented, and therefore are not making the best use of the limited resources available. In many cases the countries will not be able to create the critical mass in all relevant research areas in the foreseeable future. The UK could be instrumental in catalyzing South-South research co-operation and the development of regional centres of excellence.
7. *The concept of centres of excellence*: It is currently, at least in parts of the developing world, not a realistic goal to change underfunded universities into world-leading institutions in the short to mid-term. Instead donors in the UK (and elsewhere) should focus on assisting the universities (and research institutions) to develop into functioning entities, e.g. strengthening their capacity to supply the country with the skilled workforce that is needed as well as undertaking the relevant research, that will positively impact on the lives of ordinary citizens.

As a consequence of inadequate higher education capacity and limited career opportunities for young researchers, problems of brain drain also remain acute in developing countries. Migrants from developing countries are generally more likely to stay permanently in their new home than return to their country of origin, where the opportunities are fewer but the need for highly skilled people is much greater. The brain drain of scientists is a particular problem. Scientists are vital to countries looking to build their own research capacity, but are readily attracted by opportunities at well funded universities, research institutes and companies abroad.

Both directly and indirectly, diaspora communities are key conduits in fostering the transfer of knowledge, technology, capital and remittances to their country of origin. This is particularly important for developing countries where diaspora communities can encourage high tech-industries and act as bridges between foreign technology, markets, local innovators and entrepreneurs, whilst also understanding how such opportunities might best complement cultural factors and strengthen local institutions. By leveraging relationships in both countries, the diaspora can facilitate exchanges which match economic opportunities. A new array of policy tools are needed which enable universities, governments, research funders and companies to help diaspora connect and contribute to development in their home countries. This is particularly important for the developing world, and the developed world has a responsibility to facilitate and assist this exchange wherever possible, particularly given that they are usually the main beneficiaries of 'brain gain'. Identifying and testing such policy levers could form part of an innovative package of measures that DFID uses to tackling development priorities, in partnership with other agencies such as universities and DIUS, and the Royal Society would be very willing to assist where possible.

More generally, the international community needs to encourage the development of indigenous scientific expertise and programmes of research and innovation. Past mechanisms have not been adequate because of their short-term nature. Developing country scientists need continued, predictable support in order to perform effective research which will have real impacts for development and poverty alleviation and will help to address national needs. Short-term, low-level funding will only demonstrate lip service to addressing the MDGs but not allow for exploitation and long term technology transfer into the developing country. Support mechanisms need to be planned and run for the long-term (involving horizon-scanning) and need to have the flexibility to respond to changes within the research communities of countries receiving financial support from DFID.

In strengthening research institutes and universities, and indeed across all areas under the new White Paper, the Society urges DFID to ensure that its initiatives are delivered in a sustainable way, which, where possible,

builds local capacity. For the impact of an intervention to last beyond the conclusion of the funding, particular attention must be paid to ensure that knowledge, skills and infrastructure are transferred to the local communities. Making the best use of local scientists and facilities in the design and implementation of programme work builds capacity and ensures sustainability. The higher education sector is crucial to this capacity building, and DFID is in a unique position to contribute to sustainable financial and infrastructure support to facilitate greater research capacity.

In addition to strengthening capacity at a higher educational level, there is a broader challenge of ensuring that the voices of developing country scientists are more prominent within the international research community to ensure that their views are represented and to make best use of their knowledge, skills and experience. Involvement of scientists from developing countries on international committees, boards and advisory structures is a good way of exposing these scientists to the issues at the interface of science and policy and strengthening the voice of developing countries in global scientific debates. The Royal Society does assist some developing countries through subsidising their membership of international science academy forums, but there is much scope for DFID to dramatically scale up initiatives that aim to increase the scientific advisory role of individuals and science organisations from developing countries in global debates. This only requires a small amount of funding and could be a very cost effective signal for DFID to send to developing countries about listening to the end users –those often most affected by the key policy challenges of the immediate future.

## **Tackling Climate Change**

Climate change will disproportionately affect poor countries, partly as many of them are located in the sub-tropics, and hence particularly vulnerable to the storms, droughts and floods that are the more visible components of climate change, and partly because these countries have little capacity to cope with the destruction caused or adapt to the changes in climate.

For poor countries to adapt to climate change and to develop sustainably, they need a substantial input of relevant and appropriate science and technology. Rigorous science is needed to define the problems and degree of risk associated with climate change as well as the solutions; appropriate technology and innovative approaches must be sought and provided to the people who need it most. This scientific input must comprise experimentation that produces empirical data as well as modelling, and must cross disciplines. It should encourage innovation in traditional practices and understandings, recognising the fact that climate change is cross cutting, impacting on food security, economic growth, public health and more. As mentioned above, scientists from developing countries must be involved in selecting the research priorities and defining the questions most important for their context. A review of UK climate change research for 2004 identified that only 2% of investments were directly applicable to developing countries. However, up to 36% of the research could have had wider relevance.<sup>6</sup>

This external assistance needs to be combined with a major initiative to build local science capacity, through infrastructure, education and training. This will allow developing countries to do their own research and to analyse and make use of available data and information. Building scientific capacity has been covered in more detail above.

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<sup>6</sup> Climate Change Research and Development Sciences, UKCDS. UKCDS Paper Reference: UKCDS WP3.0\_211207. Available at [http://www.ukcds.org.uk/assets/documents/UKCDS\\_Canddevelopmentsciences.pdf](http://www.ukcds.org.uk/assets/documents/UKCDS_Canddevelopmentsciences.pdf)



For low carbon development, there is a need for local, commercial, renewable energy to be available on an adequate scale. Small and medium size enterprises (SMEs) at the local level are essential for this to occur. For such enterprises to be successful and accepted, they need to grow from the bottom-up, involving many local people in the process. DFID should therefore champion SMEs and support education and training at the local level, vital for them to flourish.

### **Ensuring Food Security**

Food security is of fundamental importance to all international development strategies and an area that is increasingly pertinent given the current global economic situation. At the macro level, wealthy countries must ensure that the economic crisis does not lead to protectionism. DFID and the wider UK Government must ensure that richer countries do not use the economic downturn to push down the price of agricultural products even further than they are now, or introduce tariffs, as this would be catastrophic for the large agricultural populations who already have struggle to survive, let alone improve their quality of life.

To address issues of food security, much greater research investment is required in scientifically developed countries to achieve higher productivity, to discover and create new crops and to develop agricultural practices and crops that reduce the impact agriculture on the environment, with particular emphasis on reducing carbon emissions and nutrient leakage. At the same time, technology and knowledge transfer between developed and developing countries must be significantly improved so that developing countries can realise the benefits of these advances, as well as build their own capacity at individual and institutional level to support “non-commercial” research.

The whole science community in developing countries, from Ministries to local universities and research institutes, must also promote the use of advanced science, and countries should be encouraged to develop technologies appropriate to transform subsistence agriculture so that it is less labour-intensive and reliant upon external inputs. This will begin to create a surplus of agricultural produce, both for supporting major conurbations locally, but also for export. At the moment, agricultural exports of high quality fruit, vegetables and flowers aggravate the disparity between the subsistence farming system and these relatively isolated business ventures.

The link between food security and health is all too obvious: supplies of fresh food must be established before any sustainable health programme can be implemented. For example, malaria control programmes fail where there is food insecurity. Resilience to systemic shocks will improve where there is security in food production. The reduction of food aid could further the move towards creating a local need for new and appropriate technology inputs into subsistence farming systems so as to move these into creating surpluses of agricultural products.

Another particularly critical and difficult challenge is to break down barriers between the agricultural research community (who often prioritise production gains to the exclusion of wider environmental impact) and the environmental community (who often pay insufficient attention to economic issues). Here, DFID is encouraged to support multidisciplinary research. Similarly, investment in novel, interdisciplinary food-system modelling would provide valuable policy tools at local, national and international levels. Such models may help drive advice to farmers on which particular crops/varieties to grow in a particular season, and may also help develop equitable and efficient post-Doha trade rules.

Food security is a global issue where the UK has much to contribute through its world-class scientific research. There is a strong platform of basic plant science in the UK particularly in the area of genetics. This science is relevant to both conventional and GM based methods of crop improvement. For example, there are examples of genes that have been identified affecting many major agricultural traits affecting yield, resistance to biotic and abiotic stresses and characteristics of growth and development including flowering and seeds. However this research has not been well translated out of model systems in the UK or in the developing world. There is also huge potential to influence change through improved agricultural practices where the UK also has extensive expertise. There needs to be a better connection between basic research and the practices used in the field. DFID's ability to tap into the enormous research capacity of the UK, complemented by its networks and expertise within developing countries, presents a significant opportunity to facilitate this exchange.

Translation of research should be considered on at least two levels. There is the need to develop structures so that basic research is translated into useful technology and there is the need to ensure farmers are informed about and have access to useful new technology. The extension services (such as agricultural information officers) that are the traditional route for technology transfer to farmers are not effective in many regions and so they should be revived or substituted by new methods based on ICT, mobile phones etc.

The Royal Society will be releasing a major study in this area, 'Biological approaches to enhance food-crop production' in November 2009. This report will take a global perspective of this pressing issue, presenting the case for the need for a diversity of approaches focused on advancing scientific research in crop design and production, encouraging innovation in agricultural practices, and facilitating greater translation and exploitation of basic research and indigenous knowledge and expertise in developing countries. This report will build on a two-day multilateral workshop on food crop production held in India in 2008<sup>7</sup>. The Royal Society would welcome the opportunity to work with DFID to develop appropriate and timely initiatives in this area, and to discuss the findings of our research in more detail.

## Conclusion

The Royal Society welcomes this opportunity to respond to the DFID consultation for the new White Paper. The Society believes that DFID should put science, engineering, technology and innovation at the heart of the development process, and that they are crucial for economic growth and to address today's most important challenges – felt most keenly by those in poor countries.

In our response to the White Paper, we have deliberately chosen to focus on four critical areas that reflect the expertise and experience of the Royal Society. We believe that greater scientific literacy and understanding plays an important role in the good governance of poor countries – yet is often lacking. DFID should support initiatives that improve scientific literacy in governments, increase dialogue between scientists and policymakers and promote evidence based policy making, holding governments to account for the basis on which they make their decisions.

The Society also urges DFID to support the building of indigenous scientific capacity in developing countries, improving their abilities to carry out their own research, to make best use of existing research, and increasing their voice in global discussions of global issues. Key to this scientific capacity is an environment conducive to

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<sup>7</sup> For more information please see <http://royalsociety.org/document.asp?tip=1&id=8434>

research, both through higher education infrastructure and research investment more generally, and there is also much to gain through better training and career development for young scientists.

Finally, the challenges of food security and climate change require a substantial scientific input and increases in scientific capacity in developing countries, combined with increased attention on developing more innovative-based approach to agricultural practices and traditions. Interdisciplinary research and modelling will be key to making poor countries more resilient to external shocks. In all of these areas, scientific priorities should be set by local people and research tailored to the needs of the end user – stakeholders in those poor countries.

These are not insignificant issues and we fully appreciate the demands upon DFID's limited resources. We do, however, believe strongly in the case for investing in these critical areas and would welcome the opportunity to discuss and collaborate with DFID to advance these agendas.

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