

## ● Department for Business Innovation and Skills: Science and Society

1. The Royal Geographical Society (with The Institute of British Geographers) welcomes this opportunity to comment on the BIS Science and Society team's programme of activity and progress on its action plans, as we did with the initial consultation on *A Vision for Science and Society* by the predecessor Department for Innovation, Universities and Skills (DIUS) in October 2008<sup>1</sup>. In our response we outline specific comments on the public engagement with science; STEM careers; and science and the media action plans.
2. The Society is the Learned Society and professional body for geography and geographers. It was founded in 1830 for the advancement of geographical science. The Society maintains a strong overview of the discipline, its position and its practice in schools, higher education, and the workplace, including professional accreditation. We advise on and support its advancement, dissemination and practice in these realms and within wider public engagement and policy. We have more than 15,000 members and Fellows and, as a charity, our work reaches millions each year.

### **Overall comments: geography as a part-STEM discipline**

3. We begin with a reminder that there are a number of science subjects, in addition to the traditional core science-STEM disciplines of physics, chemistry and biology, that contribute soundly to STEM learning and research, to public and media engagement with STEM issues, and to the STEM workforce. These include physical geography, environmental science, archaeological science and parts of psychology. There is almost no representation from these disciplines, and none from geography, within the expert groups.
4. Given geography's absence from the expert groups, it is perhaps not surprising therefore that not all areas of Science and Society activity make this distinction and recognise geography within STEM. The discipline should be recognised as a science in its own right rather than a "route into the sciences". Geography – the discipline that we represent - has been formally recognised by HEFCE as a part-STEM subject for both teaching and research in Higher Education. This recognition took into account investments of the Science Research Investment Fund (SRIF); the nature of the research submitted to RAE2008; the journals that the research is published in; and the research councils and charitable funding sources that support it.
5. The part-STEM recognition for Geography is based on the fact that the discipline is an intellectually challenging subject that requires understanding and application of scientific logic, principles, methods and laws that govern the natural environment; an ability to develop and test hypotheses and to integrate ideas; and analytical capabilities to collect/select, analyse, present and interpret primary and secondary datasets, especially spatial data, and to understand and visualise complex data. Geographers are routinely trained in field, bench-lab and computer-lab work; some receive training on computer-based modelling.
6. We urge BIS to continue to adopt this full understanding of STEM and the importance of part-STEM disciplines in providing the skills, knowledge and understanding required by many employers and society more generally in the continued progress on the Science and Society action plans

**Public engagement with science** [Science for All Action Plan Update – September 2012](#)

7. As we stated in 2008, a number of the leading subject-based learned societies and professional bodies are very experienced in knowledge exchange and public engagement as effective intermediaries between science, society and policy. These organisations can be ‘bridges’ or ‘brokers’ with many highly active in public engagement activities, independent of government, and overseeing memberships that combine academics with business, teachers, consultants and the wider public. As then however, very little use has been made of that expertise.
8. The Society is a recognised leader among learned societies in engaging non-specialist, public audiences with its work. We use geography to foster a greater understanding of the changing world in which we all live, and many of the themes covered promote geographical science. It is at the heart of the Society’s work.
9. The Society welcomes that there will be more measures to reward applied, policy relevant and knowledge exchange work in the forthcoming Research Excellence Framework, and suggests that the Action Plan going forward reflects on the impact of these developments. There may be a need to examine the extent and nature of further support and training included in the plan (also linked closely with the Action Plan for Science and the Media) as the impact of REF in this area becomes clearer.

**Science, Technology, Engineering and Maths (STEM) careers** [Science for Careers Action Plan Update – September 2012](#)

10. Not all areas of progress on the action plan for careers recognise geography within STEM (and should be recognised as a science in its own right rather than a “route into the sciences”). For example the STEM Careers Review published by John Holman and Peter Finegold report for the Gatsby Charitable Foundation specifically does not include geography (Action 1.1). In contrast, it is welcome that the “Future Morph” careers advice website (Action 10.1) does recognise the role of geography in STEM careers, including reference to the Society’s own “geography ambassadors” programme (see points 15-17 for further details).
11. The STEM element of geography makes a particularly important contribution to the environment sector. The NERC/Environmental Research Funders’ Forum report (2010) on professional skills needs in the environment sector, which draws on the perspectives of more than 140 employers, highlights 15 critical skills gaps. Training in geography contributes significantly to the development of between five and seven of those skills areas, depending on the specific geography programme studied.
12. There is a need for a greater focus on the provision of careers and further study advice within a subject specialist context. In common with other learned bodies the Society has the best interests of our subject and its practice at heart, rather than the ‘conflicting interests that affect each of the other stakeholder groups’ (Ofqual 2012<sup>ii</sup>). We believe in this regard that we provide an example of good practice which could be further developed within other subject disciplines.
13. The Society’s own programme for those interested in following a career in geography, draws on our close links with not only schools, but also higher education, employers and professional geographers in the workplace to highlight the wide range of careers that geographers head into. This information is available on our own website and through the Society’s Ambassadors programme (see points 15-17). We believe this substantial existing careers guidance, which is regularly updated, could be further promoted and used as a resource by careers advisers. We have also suggested that the Department for Education may wish to consider whether, and how, these could be promoted for use more widely.

14. There should be even greater encouragement for teachers to include, where appropriate in their subject specialist teaching, case studies about the relevance and applications of specific subjects to further study and in the workplace. The Society has been encouraging teachers to embed case studies of relevant careers undertaken by geographers within their lessons. For example, this might include starting a unit of work featuring the work of a flood prevention officer to introduce hydrology. In this way pupils can immediately see the relevance and real world application of their geographical studies to a wide range of potential careers. Teachers can also draw on the case studies on its online careers web pages<sup>iii</sup> and 'Going Places with Geography'<sup>iv</sup> publication, which could be utilised further.
15. The Society's Ambassadors programme recruits, trains and supports geographers currently at university and graduate geographers from the workplace to act as ambassadors for geography in the classroom. The ambassadors are able to introduce younger students to the benefits of studying at university, of studying geography and encourage them to pursue the subject further, acting as positive role models for pupils and illustrating specific and transferable skills that can be developed as a geographer and how they are used in the workplace. The scheme also offers schools the opportunity to strengthen links with their local Higher Education Institutes and businesses.
16. Ambassadors visit schools to give presentations to Key Stage 3 and 4 pupils focusing on the relevance of further study in geography at GCSE, AS, A2 and degree level and on how studying geography can lead to a wide range of careers that draw upon either the knowledge or the skills learned, or both. In 2011 the programme was expanded through a partnership with Esri UK (the UK's leading supplier of Geographical Information Systems) and the development of a new cohort of workplace 'GIS Ambassadors'.
17. The Geography Ambassadors programme was launched in 2006. Since this time it has provided presentations to c150,000 pupils and currently reaches 30,000+ pupils annually. More than 1,200 presentations about the relevance of geography to further study and careers were provided to 37,000 school pupils last year alone. The Ambassadors act as informed and passionate advocates and role models for the relevance of geography and help showcase the importance of their subject in the real world. Feedback on the programme has been overwhelmingly positive. Teachers have commented that it has opened their pupils' eyes to the wide range of jobs that geographers do and also helped increase uptake in this subject as a result.
18. The Society also runs a number of popular conferences each year ("Going Places with Geography") which provide careers guidance from speakers from Higher Education, business, statutory and civil society organisations. Our most recent event on the 4th July attracted an audience of 370 pupils.
19. Our online careers advice for pupils<sup>v</sup> provides information on career options and the skills and knowledge the subject provides students with and what this means that they – as prospective employees - will be able to offer employers, and what they look for. The site also contains a number of career profiles that geography lends itself to, which utilise the STEM skills learnt from the discipline, in areas including the environment and sustainability and mapping.
20. When heading towards choices at degree level, our Study Geography<sup>vi</sup> pages provide pupils (and their parents and teachers) with information about each UK University that provides a degree programme for geography. Further links are provided to the previously mentioned (section 12.5) careers advice, with additional links to videos of geography undergraduates giving advice about choosing a course and of young graduate geographers speaking about their careers and the range of skills and experiences geography has enabled them to develop, and a report 'Demand for

Geography<sup>vii</sup> which outlines how the skills, knowledge and understanding gained during a geography degree are in demand by businesses

21. One area where further thoughts could be given is the role of targeted support for specific groups. The Society's programme also plays a key role in inspiring and raising awareness of opportunities and benefits of higher education amongst hard to reach communities in inner city schools and there is considerable potential to expand our geography ambassadors programme for hard to reach pupils and schools.

**Science & the media** [Science and the Media Action Plan Update – September 2012](#)

22. The Society plays an active role in promoting the important role of science, through geography, in the media. Coverage continues to be one of the highest of any learned society, with a particular focus on research from academic geography around our annual international conference. Here the Society's media team (of three) offer support and advice to academic geographers on dealing with the media, and identifying work which is high quality, rigorous and also likely to be of interest to national journalists.
23. We were pleased the training provided by STEMPRA funded by BIS (Action 1.3) was something we were able to benefit from with the Society's then Media and Communications Officer attending this event in 2011. We would welcome further events like this, particularly given the turnover rate of junior media officers in post, as well as the idea of an annual one-day conference to share best practice. However, we would reflect that these courses need to, and should, have greater recognition and consideration for the wider definition of STEM into which geography sits.
24. However, we are less familiar with other activities, being unaware of the purpose and activities of the 'national science training officer' (Action 1.2) or media training courses for scientists through the Science Media Centre (Action 1.4). Nor does there appear to be any information on either of these online. If these are to benefit STEM scientists across the board there needs to be a higher profile for these activities, and closer working with 'facilitating' organisations such as learned societies like ourselves, who are well placed to communicate and promote the benefits of schemes such as these across the academic community.

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October 2012

<sup>i</sup> RGS-IBG (2008) 'DIUS "A Vision for Science and Society" – Consultation Response"

<http://www.rgs.org/NR/rdonlyres/9FD98FB5-0DF4-4EE1-B8B5-305187D0EE11/0/RGSIBGResponsetoDIUSScienceandSocOct08FINAL.pdf>

<sup>ii</sup> OFQUAL (2012) 'Fit for Purpose' p.141 <http://www.ofqual.gov.uk/files/2012-04-03-fit-for-purpose-a-levels.pdf>

<sup>iii</sup> <http://www.rgs.org/careers>

<sup>iv</sup> RGS-IBG: Going Places with Geography <http://www.rgs.org/NR/rdonlyres/9024A8A8-F45E-449A-9C77-4C6D93351168/0/GoingPlaceswithGeographyBooklet.pdf>

<sup>v</sup> [www.rgs.org/careers](http://www.rgs.org/careers)

<sup>vi</sup> [www.rgs.org/studygeography](http://www.rgs.org/studygeography)

<sup>vii</sup> RGS-IBG: Demand for Geography <http://www.rgs.org/NR/rdonlyres/1422E618-F932-4F20-9500-C9C605246076/0/Employabilitydemandforgeography.pdf>