Advancing Astronomy and Geophysics

BIS consultation on the funding and management of UK civil space activities: response from the Royal Astronomical Society

With more than 3000 members (Fellows), the Royal Astronomical Society (RAS) encourages and promotes the study of astronomy, solar system science, geophysics and closely related branches of science. The management of space activities in the UK is of great interest to our membership and we therefore welcome the opportunity to respond to this consultation.

Q1. What are the major issues – if any – that in your view limit the ability of BNSC to deliver a successful UK Space Programme? Conversely, what aspects of the current BNSC structure work effectively? It would be helpful for responses to give evidence based on direct experience of working with BNSC.

While the rationale for BNSC as a partnership of different bodies is laudable, the need to broker the sometimes conflicting interests of those partners militates against proactive and long-term planning. Overall, the RAS believes that BNSC is not able to provide the strategic and overarching leadership of UK space activity that is needed.

This lack of resources and political 'clout' undermines the UK's ability to deliver its commitment to the Global Exploration Strategy (agreed in 2007) or to participate in long term projects such as space situational awareness (space debris, space weather and other hazards). For example, there is no real connection between involvement in international missions and the provision of funding to UK instrument providers who are dependent on separate funding sources.

If an independent space agency is brought into being, the future consolidation of funding from the BNSC partnership will require detailed consultation with the scientific community.

Q2. Compared to the current partnership, is there a case for considering different institutional arrangements for funding and managing UK civil space activities? What possible alternative models might the Government consider, and what are the potential benefits and disadvantages of these models?

The UK is almost alone among the advanced countries in not having an independent space agency with its own budget and high profile leadership. While the Society supports its creation it is essential that the scientific community is involved in its detailed planning to ensure, for example, synergy between Space and Ground Based Astronomy if these were to become separately funded. It is essential that additional

funding for space should NOT be at the expense of the science research budget. A science-based vision for civil space activities would add impetus to the development of industrial capacity and promote more effective coordination with ESA, NASA, JAXA and other leading national agencies.

Additional questions

Q3. Views on maintaining and developing a UK space capability in industry and academia to meet UK needs including our international commitments.

The UK needs to keep hi-tech jobs and expertise in the UK. Civil space activities can help with this and they are a driver for innovation. The UK is a world leader in some areas of civil space activities but often misses out on the exploitation of this innovative work due to a lack of sustained support over the long term. A space agency could help in this respect by harnessing our scientific and industrial know-how to the implementation of a coherent long-term vision for civil space activities and thus assist with the retention of expertise in the UK.

Q4. Views on playing an effective role in defining future European and global projects.

With a single, independent UK space agency and a well-defined science vision, we believe that the UK can more easily be proactive in our areas of strength and interest. The UK has considerable expertise in many areas of space activities (both in academia and industry) and already continually leads proposals for new projects, but this is not assisted by an existing national space body which lacks the profile of fully-fledged national agencies elsewhere.

Sustained funding of research at internationally competitive levels is necessary to maintain the UK's leading edge in astronomy and space science. At present, measured by citation analysis, in astronomy and space science research the UK is second only to the USA, a position that can easily be eroded, making it less likely that British personnel would occupy leading roles in developing and implementing future space programmes.

Q5. Views on enabling the views of research communities in Environmental and Space Science, and the wider user communities, to be taken into account in decision making on new projects/programmes, thus maintaining a user driven approach.

Should a UK space agency come into being, it will need scientists and engineers to give an informed presence at scientific meetings, articulate the vision and priorities, be alert to new possibilities and emerging technology and promote civil space activities to new users from traditionally non-space groups.

Q6. Views on maintaining the Haldane principle in determining decisions on Space and Environmental science opportunities.

The Haldane principle separates responsibility for strategy, which in this case must be set by government, from decisions on individual scientific projects. The RAS believes that peer review is quite simply the most effective and efficient way of ranking competing claims and has been a major factor in the continuing strength of the UK science base. ESA, for example, is an applications-driven organisation but its activities are determined on scientific priorities; the same must continue to apply in the UK.

Q7. Views on achieving an overall balance across science, innovation, exploration and operational opportunities for space, and ensure exploitation of space assets across academia, industry and government.

Space science and astronomy are a small albeit vital part of the £6bn space industry in the UK. The Society therefore does not wish to comment on areas (such as industrial policy) outside of our remit and would not argue for a specific balance at this point. However, we urge the Government to ensure that consultation with the scientific community is an important influence on their decision in this area.

One specific example we would like to raise concerns the exploitation of space science assets in the UK, which we believe has suffered greatly in the past. There has been money to build instruments but the UK rarely gives adequate funding to space scientists to gain the rewards from this investment and exploit the instrument to its full potential. With a coherent programme, work can be matched either to ESA projects or the UK can seek other partners for projects which develop existing skills and expertise.

Q8. Views on developing the proposed ESA facility and a coherent and complementary national space centre capability.

This is an opportunity which should be exploited to the full and gives the UK great credibility with our international partners. The UK should take advantage of the ESA and national facilities to concentrate on the development of those areas where we have established a world class reputation (such as small satellites and instruments, space weather, space situational awareness, planetary protection, sample analysis and operations).

Q9. Views on advising government on space funding in the context of future spending reviews, and tensioning this against other spending priorities.

Having a UK space agency would show more clearly that the funding comes from one pot of money. UK civil space activities are an area where the UK needs to sustain funding since it delivers the highly skilled scientists and engineers that the UK needs for innovation and economic revival. Spending reviews have injected funding for individual projects such as ALMA and MIRI at critical moments, enabling the UK to participate at a significant (leading) level, but future funding needs to be part of a coherent policy which integrates scientific aspirations with long-term economic and industrial objectives.

Q.10 Views on negotiating with government departments and industry to deliver their engagement in space activities.

In contrast with the present arrangement, a single independent agency would have a clear focus for lobbying government, driven forward by the science vision, and it would be able to act across departments.

Q.11 Views on promoting UK wealth creation through the effective exploration by UK business of upstream and downstream market opportunities.

The Society does not wish to comment on industrial and economic policy. On the specific issue of space technologies, we note that scientists and engineers here rarely have the opportunity to exploit their world leading innovation to the full due to the

piecemeal approach to funding. With its strong links between academia and industry, we believe that UK space activities could manage this better with a single agency.

Q.12 Views on ensuring the proper tensioning between expenditure on civil space activities and other priorities across Government.

There has to be a balance but activities such as space science will help develop new technologies, and the underlying infrastructure will need funding, judged against other priorities. We believe that having a UK space agency will assist with this process.

Q.13 Views on ensuring proper accountability for expenditure, including – if new budgetary arrangements are proposed – which department is best placed to oversee this expenditure.

If a new UK space agency is created, it should be an independent body but one accountable to government. We strongly believe that this accountability should include consultation with and input from the scientific community.

Q.14 In addition, are there any other issues that need to be taken into account that would help the UK maintain its excellence in any aspect of space activity?

BNSC has been largely invisible. A champion of UK space activities, like a national space agency, provided it devotes appropriate resources to education and outreach activities, will inspire future generations of scientists and raise the profile of space and science in the UK.