

A National Academy for Mathematical Sciences

Green Paper

Frequently Asked Questions¹

Paragraph numbers relevant to each answer are given in brackets. Please send any comments or queries to national.academy@newton.ac.uk

Further questions stemming from the Townhall Meeting on Tuesday 11th January appear on pages 3-4.

Q. Can't we achieve the stated aims of an Academy through existing bodies such as the learned societies?

A. There is a clear need for a single body taking ownership of the functions outlined in the Green Paper. The current arrangements are inevitably fragmented, since the existing bodies are all to some extent limited in their coverage of the subject or in the participating sectors of the profession. A single voice will give the mathematical sciences a much stronger impact in the national conversation. **(36-38; 48-50)**

Q. What is the added value of an Academy as compared with CMS?

A. The CMS has done an excellent job in difficult circumstances and with very limited resources. But it is overly constrained by its constitution, and restricted by its remit (for example it does not generally concern itself with pre-university education matters). The CMS's lines of communication with the mathematical science communities and with wider society are both severely limited by its small scale and somewhat mysterious membership. **(51-55; 59-60, 64; 71-75; 85-89; 96-97)**

Q. Where will the resources come from?

A: This is not in the remit for this report; but possible sources of financial support include some or all of the following: the research funding bodies, government, wealthy individuals and charitable bodies, and subscription payments by Fellows. In the initial set-up phase of the Academy administrative and technical support would be expected to be provided by ICMS and INI. **(19d; 123-130; 132-136; 142-144)**

Q. How will Fellows be chosen? What will be their role?

A. This was not part of the remit for the Green Paper. But it is clear that the proposals envisage a working Fellowship, and indeed the Academy will not function without such a Fellowship. Hence, the Fellowship should not and cannot simply be a "reward" for a successful career, but rather the Fellowship should be – and indeed will need to be – very diverse as regards age, gender, professional background and geographic location. The

¹ Please note that the answers presented here are formulated by the National Academy Working Group and do not necessarily represent the views of the Council for Mathematical Sciences.

Fellowship must reflect the breadth of the Academy, and hence be drawn from mathematics educators and educationalists, university researchers and lecturers, and practitioners in business and industry. **(19a; 90; 117-122)**

Q: Would an Academy only represent England, or the whole of the UK?

A: The Academy would represent the interests of all the countries of the UK and not be limited to England alone. Given the clear differences between the different countries and even regions of the UK, and the range of representative bodies involved, a corollary of this is the clear need to have participating Fellows in the Academy from all parts of the UK.

Q. Who will make the initial appointments in 2022?

A. Since the Green Paper was commissioned by the CMS, it is anticipated that the CMS would oversee the making of the initial appointments. However, given the recognised need to reach out beyond the learned societies, it is expected that this would be done in close consultation with the JMC and possibly other interested parties. **(20; 134-140)**

Q. Will an Academy be independent?

A. It is absolutely crucial that the Academy should be completely independent of all learned societies and professional bodies. On the other hand it is not the aim of the Academy to replace any of these organisations – therefore, excellent lines of communication and an atmosphere of mutual support will be a *sine qua non*. The Academy will help bring together the various facets, and amplify and focus their voices externally. **(Foreword; 11-16; 36-38)**

Q. Will the Academy aim to develop closer connections between the mathematical sciences community and the media?

A. The answer is, undoubtedly, “yes”. The pandemic has made much more visible than heretofore the crucial role of our subjects in the functioning and analysis of modern societies. There is thus a corresponding necessity for clear and detailed reporting and monitoring of that role. The Academy must therefore develop clear and efficient communications across the media landscape. Such contacts already exist, of course, involving both individuals and organisations, and the Academy should build on and coordinate these. **(11-13; 53,55)**

Q. What about involvement of the Academy in wider policy matters?

A. The Green Paper Working Group deliberately chose not to give an explicit list of policy matters with which it, and mathematical scientists more widely, should be involved, since such a list would inevitably be incomplete. But again, the need for involvement across a very wide front has been brought into clearer focus by the pandemic. To give just one example among many: there is a need (already recognised in activity by the RSS) for clear and widely-accepted guidelines to be discussed and drawn up on ethical practice in data analysis.

Questions added following Town Hall meeting, 11th January 2022:

Q. Did the working group consult any existing Academies or similar organisations while preparing the Green Paper?

A. Yes –consultation was carried out with the Royal Academy of Engineering, the Academy of Social Sciences and the Academy of Medical Sciences, for example. Those consulted were in general very supportive; it will be important to make use of their expertise and experience in the early years of the NAMS. **(53)**

Q. Why were risks to delivery not explored in the Green Paper?

The Working Group was tasked with offering a model for a National Academy, with sufficient detail, and rationale, to give interested readers a concrete notion of what such an entity would “look like”. The Green Paper also offered a roadmap, with timelines, as to how a fully-fledged Academy might be realised.

The Working Group recognised that there are many difficulties in creating a new Academy, and undertook consultations with other academies and large learned societies to learn from their experiences. It was felt that the roadmap offers a way to mitigate risks, with minimal disruption to the existing bodies supporting UK mathematical sciences, and that the set-up phase would allow time to explore risks to delivery as a key part of the deliberations. **(131-144)**

Q. How will the Academy ensure that school teachers are not viewed as “poor relations” in the formation and operation of the Academy?

A. First, it will be vital to ensure that the small group of initial Founding Trustees is representative of all sections of the mathematical science community, including education at school level. Second, in the medium term, the systems set up to select new Fellows must be designed to ensure that fellows are appointed from across the whole spectrum of the mathematical sciences. As is stated in the Green Paper, similar remarks apply to practitioners, and across the full range of EDI concerns, including age, gender, race and geography. Mathematical Sciences is unique among current national academies in having such a central role in the school curriculum and consequently NAMS will be broader in scope than some other existing academies. Nonetheless, the question of how to ensure that the fellows properly represent their entire community has been and is being faced by the other national academies, and the NAMS will benefit by adopting best practice from them. **(118-121)**

Q. Why not “mathematics” rather than “mathematical sciences” in the name of the academy?

A. A definite decision was taken that, to emphasise the breadth and inclusive philosophy of the academy and despite the increased length, the latter term should be used. Many

statisticians, for example, do not regard themselves as mathematicians, and rightly wish to emphasise the distinctive nature of their discipline. The Academy of Medical Sciences has followed a similar path in this respect.

We recognise that there exist differences in common terminology within our community. Whereas the Research Excellence Framework for academic research considers “mathematical sciences” collectively, most school teachers presently refer to their field as “mathematics education” rather than “mathematical sciences education”. Over time we believe that all will recognise that “mathematical sciences” best reflects the plurality of sub-groups and disciplines within our field.

Q. Will the Academy offer professional accreditation, e.g. for practitioners? If so, how?

A. No, the Academy will not offer professional accreditation. The IMA, RSS and ORS already do this, and it is not the intention that the Academy should usurp any of the existing activities of the learned societies. As was discussed in the Town Hall Meeting Zoom chat, a number of the existing national academies follow a similar pattern.

Q. The proposals for the Connected Centres Network seem significantly more costly than those for the Academy – is this correct?

No, this is not correct when comparing, like-for-like, the anticipated Connected Centres Network (CCN) costs against those of a fully-fledged National Academy. The CCN document sets out a clear administrative and governance structure, with suggested ways to support this in the short term. Additional projects within CCN, for example funding activity to create capacity and mobility nationally, will require extra financial support.

Q. The word “Fellow” has unfortunate gender connotations – can we not find a better term?

A. The working group discussed this at length, being well aware of the unfortunate connotations. But the existing word has strong advantages – its meaning is widely recognised, and it conveys status to the awarding body, hence – it is to be hoped – a weight of influence which will be crucial to the success of the Academy in the early years of its operation. We could not find an alternative word which carried these advantages.