Independent Review of SFC's Research Pooling Initiative

Scottish Government invited questions

The original aims of the pooling initiative were around research capability and capacity through large scale investment in staff, students and facilities, rather than knowledge exchange and industry engagement (although some pools, for example MASTS, did have a focus on policy engagement). The review will examine whether the pools met their original aims of increased mass and research quality.

In the current second phase of pooling support lower levels of funding have sustained the central core of collaborative activity without the large scale investment in capacity.

- **The panel recognise a strong expectation to demonstrate value for money in the current environment and would welcome SG's views on how this could be shown. For example, what metrics might be appropriate measures and why? What outcomes would be realistic outcomes that the SG might value and why? Are there other indices apart from monetary value that the SG would like to see I.e. please describe what 'value' means?**

The Scottish Government's clear expectation is that this review will provide an insight into value for money based on how the pools met their original and (where applicable) additional aims.

Being able to describe this, based on both quantitative and qualitative evidence, would be helpful in raising the profile of the pools and help make the case for continuing investment at a particularly challenging time for public funding. However, we also recognise that defining value for money in respect of the funding invested into the research pools is as challenging as it is for research funding in general.

In terms of the "value" of the pools, it would be helpful to consider how the research pools have delivered on their aims, especially around increased collaboration, capacity and research quality. The focus should be on measurement and description of the outputs and outcomes delivered by the research pools rather than of activity.

In general, the Scottish Government considers the following outputs and outcomes relevant for assessing value for money from public research and knowledge exchange investments:

Outputs:

- Ideas and bids for further funding
- New knowledge, data, skills, publications and cultural/creative output
- Strong national/ international research collaborations and knowledge clusters (incl. industry)
- Research jobs and infrastructure
- Inventions, patents, proposals, advice
- New companies, joint ventures, commercial contracts

Outcomes:

- Scientific advancement, renown, research excellence
- Contribution to national and local economies
- Further funding, private investment (incl. BERD) and inward investment
- Increased market opportunities, competition, sales and exports
- Skilled, diverse workforce and increased (high quality) employment
- Better decisions and policies, practical innovation and productivity improvement / increased cost effectiveness
- Cultural diversity and improvement in public services and societal issues

There are a few possible indicators which could provide an (indirect) measure of some of these outputs and outcomes :

- Measuring outputs (in comparison with university research generally): Number of publications from researchers involved in research pools; and
- Number of such publications with international collaborators; and
- Number of collaborations/projects of research pools with industry; and
- Number of jobs created through research pool activity; and
- Number of patents and new companies created through research pool activity.

Measuring outcomes:

- Changes in the **Research Excellence Framework (REF)** scores for disciplines relevant to the research pools, compared with changes in the REF scores for disciplines that have not been included by research pools; and
- Changes in **levels of competitive funding** (from Research Councils, European Commission or third sector) attracted to the research pools compared with changes in the levels of competitive funding for disciplines that have not been included by research pools; and
- Changes in private sector investment in the research pools (compared with such investment in university research generally).

These measures would not be able to give the full picture and there are particular issues around timescale, ensuring appropriate comparisons can be made, and the

impact of other extraneous factors, but, if they can be gathered, they might provide a helpful indication of the value returned from the public investment.

In addition to these quantitative indicators, the description of case studies showing the journey from input funding through activity and outputs to outcomes (and where possible to high level impacts based on the National Performance Framework) would also be helpful.

As highlighted above, some pools have developed a focus on providing policy advice to relevant policy areas within government or indeed more widely with government and parliamentary colleagues.

- **Can you identify cases where research pools have built positive and valuable relationships with policy areas of Scottish Government? What evidence can you provide of these? How important to the SG is sustaining such relationships and why? How might these be supported?**

We have not kept track of cases where research pools have built positive and valuable relationships with other policy areas of Scottish Government – although that does not mean that they have not occurred, merely that they have taken place without involvement or knowledge of SG Higher Education and Science Division.

We are however aware that the Directors of the research pools are seen by the Scottish Government as research leaders in their discipline with a helpful strategic overview of the policy challenges and opportunities facing the academic community. One example that we are aware of is a meeting convened by the then Minister for Higher Education to hear the views of Directors of the possible impact of the UK leaving the European Union soon after the EU referendum.

In general, we would suggest that the Research Pools themselves would be in the best position to give an indication of the policy connections they have made. These could also be with government organisations other than just the Scottish Government.

Since the inception of pooling the landscape has changed significantly and the panel are interested in the role of pools today and in the future. The written evidence received so far alludes to the cultural impact of pooling, especially around collaboration as well as a role for pools in providing a representative view of large sections of the research base; acting as an expert point of contact for research users such as policy makers, Innovation Centres and industry; the developing European landscape and in international engagement.

- **The panel are interested in Scottish Government's views on the above role for research pools?**

As referred to above, the Scottish Government recognises the capability of the research pools in this space. However, we would expect the review to provide evidence that such a coordinating role has had, and would continue to have, added value in respect of outputs and outcomes.

Evidence has also emerged suggesting that the pools may have a lack of visibility outwith Scotland and also outside the research community.

- **what are the Scottish Government views on this and why?**

The Scottish Government recognises that the research pools lack visibility outwith Scotland and the research community. That lack of visibility for the research pools extends to Scottish Ministers too.

This contrasts with the innovation centres which, while established more recently, appear to have had a higher profile.

The reasons for the lack of visibility of the research pools may be related to their original aims which were focused on the research community itself, not wider stakeholders.

We see knowledge exchange with a wide range of stakeholders as an integral part of research activity. We believe there is great opportunity for the research pools to improve their knowledge exchange activities, which in turn should improve their outputs and, particularly, outcomes.

The research pools, guided by SFC, should investigate how they could better work together in this area in future, with consideration of collaborative KE activity and branding rather than maintaining the impression towards stakeholders of multiple silos.

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Dear Louise,

Thank you for the opportunity to contribute to the review in my capacity as Chief Scientific Adviser for Environment, Natural Resources and Agriculture (CSA ENRA), a role that I took up in October 2018. Given my relatively recent appointment, I would like to emphasise that the comments made below are made from a personal perspective and are not the views of RESAS or Sottish Government. Prior to my appointment as CSA ENRA my experience of the pools was through my position at the University of Edinburgh. I was peripherally involved in the establishment of SULSA, then directly involved in 2007-9 when I served as its Theme Director for Systems Biology. I attended Executive committee meetings both then and again as Director of Research for Bio Sci in Edinburgh, in 2018. I had very limited contact with SUPA and SICSA, and have recently been closer to MASTS and SAGES as CSA.

The original aim to achieve sustainable critical mass did not apply to SULSA overall. It was relevant to Systems Biology, which was a relatively new, interdisciplinary area in 2007. The proximate effects of SULSA, as for all the pools, were to inject funds and to increase coordination and collaboration. The shared disciplinary interests within each pool crossed the participating Universities. This gave the opportunity for a community of practice to create 'horizontal' organisations that went some way to mitigate the necessarily competitive interactions that otherwise prevail between the Universities, whose main structure is their 'vertical' internal hierarchy. The pool creates a new, boundary organisation: we seek an organisation that has buy-in from its institutions, operates well internally and is effective externally. Retaining that organisation is the minimum requirement for a pool to exist at all.

The SFC's other stated aims, research competitiveness, quality, and attractive environment, can be affected directly by the funding, but also indirectly by the success of the pool as an organisation. Joint panels might attract better candidates and make better decisions in academic appointments, for example. The indirect effect (or 'pooling dividend') must obviously justify the pooling structure, or the funds could have been more simply divided among the participants. Where direct funding is limited in the continuation phase, the indirect effects should be more significant.

You invited me to consider specific points:

1. **The oral evidence session with Scottish Government highlighted the importance of demonstrating value for money and your views on how this should be demonstrated, especially in this reduced funding continuation phase, would be welcomed.**

The value for money of academic appointments and of studentships can be measured using standard research outputs: papers + citations (not impact factors, *pace* sfDORA), open data, software, esteem, external funding, other impacts. There are few benchmarks, so I imagine that the pooling dividend cannot easily be distinguished from other changes over time. My reading of the 2019 SSAC Landscape report from Elsevier suggested that the analysis there did not directly address these questions. There is no general indicator for value for money in facilities, because research facilities are so varied.

I suggest that direct indicators of greater collaboration will be equally useful, from an assessment of both the collaborative activity within the pool itself (committees and other groups, joint pool-funded facilities) and increased fraction of joint publications, funding applications and awards among pool partners, or joint organisations and facilities that are not directly pool-funded (such as the European Lead Factory). There might be some natural control data, from comparable results for collaborations with non-pool UK institutions.

2. **Some pools have developed a focus on providing policy advice to relevant policy areas within government, or indeed more widely with government and parliamentary colleagues. How aware are you of cases where research pools have built positive and valuable relationships with policy areas of Scottish Government? Can you provide information on these? How important to the SG is sustaining such relationships and why? How might these relationships be supported?**

Essentially unaware, with only indirect notes that Marine Scotland has contact with MASTS (note I am not long in post). SAGES has offered an internship to RESAS this summer. The pools are important because a single set of contacts in the pool offers SG access to many HEIs. The pools are not unique in this. The Centres of Expertise funded by RESAS have a similar function and much closer contact to SG. The SFC IC's are similar for commercial partners, with less contact to SG.

3. **Since the inception of pooling, the landscape has changed significantly and the panel are interested in the role of pools today and in the future. The fit of research pools into a landscape focussed on interdisciplinarity and challenge-led research in the current UK research landscape has been discussed in the written evidence received so far, as has the increased focus on economic and societal impact. Do you see a role for pools in this altered landscape?**

I argue above that inter-institutional links in the pools depend upon a community of practice. A mostly disciplinary focus of the pools therefore remains entirely appropriate, because most funding remains disciplinary, the academic structure of the Universities is disciplinary and has changed little and Universities are the core constituency of the pools. More important, disciplinary rigour remains the necessary foundation for interdisciplinary mixing.

In fact some pools did support academic interdisciplinarity, as SULSA Systems Biology did, hiring academics trained as physicists and chemists into biology departments. The smaller universities that initially had no interest in Systems Biology were drawn in and made good appointments in SULSA. I imagine the life science focus in SUPA2 might be similar.

It would be consistent with this model to use an interdisciplinary community of practice as the basis for a future pool. This might not fit as easily with University structures. In contrast to disciplinary departments, institutions will not necessarily have interdisciplinary organisations all in the same area of research, to form a pool. Not all institutions would need one at the start, perhaps, as the pool might create momentum as in Systems Biology (above).

The newer funding resources from UKRI, Gates and elsewhere are indeed challenge-led. Challenge-led projects need scholarship for evidence synthesis, as well as various types of research. Such a challenge could in principle develop a community of practice that crossed institutions. The key requirement, however, is co-production of research by multiple stakeholders. This entails **a combination of an SFC pool's academic links, an IC's commercial links, and a CoE's links to government. There is no reason *a priori* why Scotland could not develop such a model.** We might have significant advantages in doing so, where SG's research funding has created the foundational organisations. It will require engagement and funding from SFC, Scot Ent, Health or RESAS, and perhaps a local partner such as HIE.

4. **Evidence has also emerged suggesting that the pools may have a lack of visibility outwith Scotland and also outside the research community. Do you have any views on this?**

I agree with that view, I think it is expected and is not an indicator of failure. First, the academic research community in Scotland was the primary constituency for the pools. Linking the universities (and other organisations) in the pools was the main

activity and in this community, they are well known. Pools had much less contact to other stakeholders (except perhaps for research funders), by design.
Second, the pools' flexibility was a key strength, essential given the differences among disciplines. However, that meant that no two pools were alike, diluting the understanding and expectation of what a pool is and does.
Third, the pools operated both as a research funder and as a quasi-institutional affiliation, but in each case the pool's contribution was partial. Very few staff (some administrators and facility staff) were completely funded by a pool; either salary or research project funds were provided by others (early requests to provide project funds in SULSA Sys Bio were not agreed by SFC). This is good for leverage, but means that the pool's brand necessarily competed with much larger, longer-established and more comprehensive brands such as the Research Councils and especially the Universities, and there were relatively few occasions when a pool was the primary identity.

Yours sincerely

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