

Institute of Physics Pioneer Prospectus Feedback

About the IOP

The Institute of Physics is the professional and learned society for physics in the UK and Ireland. Many of our members from across the physics community, particularly industry and academia, rely on collaboration with European partners for their innovation and research activities. Following the UK's departure from the EU, our loss of membership in European Framework programmes for research and innovation, especially Horizon Europe, has been a cause of great concern and uncertainty and has already damaged many fruitful, long-term partnerships and collaborations.

While welcoming the opportunity to comment on the government's plans for the Pioneer programme, the position of the IOP and wider science community is clear: association to Horizon Europe is critical to maintaining the UK's place at the heart of international science, so, for the good of UK science and innovation, the government's priority must be to secure association.

Feedback on Pioneer

The following feedback is not representative of the views of all IOP members, but is based on targeted engagement on the Pioneer proposals, organised to provide DSIT officials with the opportunity to hear directly from members of our community:

- A special meeting of the Heads of Physics Forum, involving the heads of university physics departments.
- A roundtable discussion jointly hosted by the IOP, Royal Society of Chemistry and Royal Society of Biology, with members from each society representing academia, business and early career researchers.

The issues raised fall into four broad categories:

1. Uncertainty and policy instability

One of the biggest needs of the science and business communities in carrying out world-leading research and ultimately turning this into world-changing technologies, medicines or other products is policy stability. Horizon offers this through long-term funding and calls with long advance periods (up to 1 year). In contrast, the Pioneer proposals still contain significant uncertainties. Funding under Pioneer is subject to future spending reviews of the UK Government, for example, and is to be awarded with reference not just to excellence (as under Horizon), but to other Government agendas such as Levelling Up and geographical priorities as well. While the ability to target funding to UK-focused goals could be beneficial, frequent shifts like those seen in the UK's political landscape in recent years - and the attendant changes in priorities over relatively short periods of time and with limited notice - would create uncertainties that could cause significant problems for researchers and companies in the UK under Pioneer. Uncertainties like these would make it more difficult to attract the best researchers to come to and stay in the UK. Furthermore, the subordination of science funding commitments to changing UK Government priorities in general causes some anxiety as to the risk of introducing greater political control of scientific research, which can stifle the innovation and originality upon which great research depends. In addition, while Horizon operates on a single funding cycle, the UK alternative as currently formulated would have multiple delivery partners, each with different rules and funding cycles. Despite assurances that these funding cycle issues are being looked into, it is not yet clear how they will be resolved.

2. Balance between small and large grants

DSIT has also indicated that feedback received from researchers shows that longer and larger grants are preferred (which implies that they will be fewer in number for a fixed overall funding amount), in contrast to Horizon's focus on more and smaller grants. How these longer and larger grants will interact with the uncertainties of shifting Government priorities mentioned above is unclear and, given the concerns about a lack of engagement, some additional clarity about the source of the DSIT feedback supporting longer and larger grants over smaller ones would be beneficial, as it contradicts the views of some of the IOP's membership, which emphasise the importance of preserving the balance between smaller grants, especially at the early research career stage, and longer and larger programmes, ensuring that the former are not sacrificed due to an excessive focus on the latter for reasons of administrative convenience. Preserving the balance between the two is key to maintaining a self-sustaining grant ecosystem.

3. Insufficient emphasis on curiosity-driven research

Some concerns were also raised about the lack of focus on curiosity-driven research in the way the Pioneer proposals have been presented, which don't seem to properly highlight this important aspect of developing scientific thinking. In addition to policy stability, funding for curiosity-driven research is essential for driving UK physics to reach its full potential in giving future generations the breakthrough discoveries, innovative new technologies and transformative new materials that will support the cutting-edge industries of tomorrow. Although the prospectus includes provision for curiosity-driven research funding under the 'Talent' and 'Discovery' programmes, it has been lacking emphasis. Curiosity-driven research is often the basis for inter-University links as well as the starting point for the pipeline that leads to practical applications in industry. Additionally, if the intention is for UKRI to assist in the support curiosity-driven research, then the links between UKRI programmes and Pioneer must be clearly spelt out.

4. Preference for Horizon

As negotiations continue between the UK and the EU on our association to the Horizon Programme, the position of a significant proportion of the IOP's membership, as well as most of the science community, is that association to Horizon is by far the preferred outcome for UK physics. While the IOP and wider science community recognise that an alternative must be developed in case association negotiations are unable to reach a successful conclusion, this must be carried out on the understanding that Horizon offers the best support for UK physics research and physics-based businesses. To date, however, the community has noted a lack of engagement from DSIT in developing the alternative Pioneer proposals. The risks of this are twofold: on the one hand, the importance of Horizon association to the science community may be overlooked by officials and, on the other, the alternative proposals being developed may fail to capture the benefits of the Horizon Programme as experienced by the science community, leaving the UK with an inadequate outcome if negotiations fail.

Horizon, as an EU-wide programme, offers benefits that would be very difficult for any UK-led programme to replicate. Europe has been the UK's biggest research collaborator and UK science has achieved significant success through the programme. As a long-standing sequence of programmes, Horizon and its predecessors have gained a worldwide reputation for excellence and have built up a well-developed scaffold of networks, relationships and infrastructure (often UK-led) that cannot be replicated quickly by the UK acting unilaterally. Nevertheless, in order to act as a proper backstop, the Pioneer proposals should attempt to do exactly that as best they can.

Other points

Pioneer's proposals on infrastructure have received positive feedback, particularly the commitment to increase invest in infrastructure across the whole of the UK, although the interaction of these aims with existing infrastructure programmes through UKRI would need to be clarified. Increased investment in infrastructure has long been a key ask from the physics – and wider science – community. It has therefore been suggested that these proposals should be developed and introduced alongside association to Horizon Europe.

Should Horizon negotiations fail, care must be taken that Pioneer's aim to attract global talent – and to therefore not focus solely on the EU – does not happen at the detriment of the many, significant and hugely beneficial relationships UK researchers and companies have developed with EU colleagues through previous Horizon and other programmes.