

Initial call to submit evidence to the KEF metrics technical advisory group: **Imperial College London Response**

Introduction

Imperial College is supportive of the proposed Knowledge Exchange Framework. A more robust methodology for measuring institutional performance in this important area will help to raise and maintain the status of Knowledge Exchange alongside Teaching and Research. In order for the KEF to succeed, we believe that there are four areas which need to be addressed as a matter of priority:

- Should the KEF judge institutions performance against their own Knowledge Exchange Strategies, or should a universal set of performance indicators be developed?
- How does the KEF relate to the REF, in particular the impact case studies?
- How broad is knowledge exchange? For the purposes of the KEF? Should it be narrowly focussed on commercialisation; or as broad as the current HE-BCI, encompassing community outreach work?
- How should metrics be developed and used in ways that are responsible and helpful?

We address these points in further detail in our responses to the specific questions.

1. What approaches and data need to be used to ensure a fair and meaningful comparison between different universities, taking into account factors that might impact individual institution's knowledge exchange performance (such as research income, size or local economic conditions), whilst allowing identification of relative performance? How should benchmarking be used?

Imperial College considers that the KEF should include a broad range of metrics, not all of which would be relevant to each institution, and that an individual institution's performance should be assessed using those metrics relevant to its own Knowledge Exchange Strategy. For example, the College has made a conscious decision within its KE Strategy to prioritise technology transfer and supporting business partnerships over other areas of KE. As another example, institutions need to adopt their own priorities amongst methods of research commercialisation (e.g. balance between licensing and spin-out). It would be regretful if such decisions were distorted by a perceived need to 'hit' every single metric.

There is unlikely to be a single 'input' metric by which every 'output' metric can be divided in order to give a benchmarked measure of success. Simply dividing each output measure by research income, for example, ignores both the different costs of knowledge production in different disciplines, and the differing pathways to commercialisation in different sectors. A simple approach to benchmarking which divided all output measure by research income would risk distorting research activity towards low-cost research with clearly discernable and low-risk paths to commercialisation. This could disincentivise the kinds of high-cost, high-risk activity which, when they do succeed, have the potential to make the most significant economic and social impacts. Furthermore, it fails to recognise the complexity of the innovation ecosystem, where fundamental research undertaken in one institution may be a crucial pipeline for knowledge exchange activity elsewhere.

Local economic conditions may only be partially relevant, and in some cases misleading: highly research intensive institutions are likely to contribute to economic development beyond their immediate region, and in some cases beyond the UK. Cause and effect in local economic and industrial landscape is difficult to unpick. If an institution is situated in a hub of business and technology start-ups then there may be more opportunity to collaborate on KE activities, or an increased level of KE may be a consequence of the university being there in the first place. In reality the relationship is likely complementary, but it is hard to separate into a factor that might impact individual institutional KE performance.

2. Other than HE-BCI survey data, what other existing sources of data could be used to inform a framework, and how should it be used?

Consideration must be given to what, if any, role REF impact case studies have in the KEF. Impact Case Studies provide a valuable opportunity to describe and quantify impacts that arise in often complex circumstances, and to trace those impacts back to original research. They provide a level of sophistication that a metrics-based KEF is unlikely to achieve. However, it is recognised that, as case-studies, they necessarily lack complete coverage.

One of the most important mechanisms for Knowledge Exchange is the employment of graduates in roles where they will directly use the skills and knowledge that they have acquired in their degrees. The new Graduate Outcomes survey contains a question to capture this information, and could therefore be a source of a relevant metric.

Industrial income (as shown in the HESA FSR), as well as being an input measure, is a good proxy for the extent to which institutions are responsive to the needs of industry and are delivering value to their industrial partners. The distinction between collaborative research and contract research is less informative than the overall scale of industrial collaboration.

Data reported in Research Fish could be used to capture KE generated from public funding, augmented by data direct from Research Councils on metrics resulting from large KE investments from the Research Councils via the Impact Acceleration Accounts (which are not reported in Research Fish).

3. What new (or not currently collected) data might be useful to such a framework?

The range of metrics which might be developed, and the data that could be collected, is vast. Which data are relevant depends upon the scope of the KEF, and in particular, whether it is focussed on research commercialisation, or covers the broader space of outreach and community engagement. We offer below proposed data and metrics covering both of these areas.

Public engagement, including areas such as outreach and community partnership, is a vital part of the mission of Higher Education Institutions. Imperial College's Strategy places particular emphasis on this area of activity, under the rubric of 'Sharing the Wonder'. It is, however, an activity in its own right, with its own *raison d'être* and priorities, and not a sub-section of the Knowledge Exchange Strategy. We consider that the KEF is likely to be most successful if it has a clear focus on activities which transfer knowledge from HEIs to businesses, charities and the state in order to drive economic growth and well-being through the development of new

products, services and policies. Public engagement activity does not sit naturally here. However, in case the view is taken that such activity should be included within the KEF, the College offers the following observations based on its experience of evaluating its own activities in this area:

- Metrics could include income from and expenditure on engagement. However, more guidance and consistency is needed on how funds awarded for engagement are recorded on research grants.
- Other relevant metrics could include the number of people we have trained to support their public engagement activities, partnerships we have in the community, metrics around patient involvement and staff numbers to support the activity.
- Ultimately, however, the most accurate measure of impact is written or verbal feedback from those engaged with, which is difficult to capture and assess in terms of metrics.

The following is a list of metrics which the College uses in evaluating its commercialisation activity (drawn from our 'Inventive Output Scorecard'):

Inventive Output

Number of inventions disclosed
Number of patent applications filed
Number of patents issued
Number of active inventions in portfolio
Number of active patents in portfolio

Licensing Performance

No. of new licenses signed
Number of active licenses held
Number of licenses generating income in the period
Royalty and fee income generated in the period (£m)

Startup Formation

Number of IP based startups formed
Number of Student based startups formed

Incubation Performance

Number of startups housed by university incubators
Number of startups graduated from an incubator program
Number of active incubator graduate companies

Startup Investment

Investment funding acquired by IP startups (£m)
Investment funding acquired by Student startups (£m)

Startup Companies Performance

Number of IP startups still active
Jobs supported directly by IP startups
Number of Student startups still active
Jobs supported directly by Student startups
Realisation income from sale of shares in IP startups (£m)

In designing commercialisation metrics, the following observations may be helpful:

- Current spin-out survival metrics fail to distinguish between companies that are adding to the UK economy and those that are barely surviving.
- There is currently undue emphasis placed on counting the numbers of patents, and this may distort behaviour in unhelpful ways. More attention should be given to whether they are useful or impactful.
- Licence revenue metrics should track the total number of revenue generating licences, but also indicate whether the majority of income in this area is from a few big licences or from many small ones.
- Options and licences should be recorded separately, so it is possible to distinguish between licences over existing IP and options pre-granted over future IP.
- The measurement of invention disclosures needs to distinguish between those taken forward as 'cases' rather than those that are not.
- Some forms of IP (e.g. copyright in software code) do not require registration, but are still valuable, so it would be useful to record these.
- Cases of IP that are converted to commercial deals should be measured (however, it should be noted that multiple cases could be included in one deal, so a mechanism needs to be found to deal with double counting.)

4. How should KEF metrics be visualised to ensure they are simple, transparent and useful to a non-specialist audience?

No comment.

5. Any other comments?

Given the potential for the KEF to distort activity in an area which is crucial to the UK's economic development, it will be essential to test the KEF and any potential metrics thoroughly before a full-scale implementation, via a pilot exercise, with further expansion dependent on evaluation of the pilot.