

Response to the KEF Technical Advisory Group consultation, January 2018

Introduction

PraxisAuril represents KE professionals who work in universities and research institutions to ensure researchers have the best possible opportunities to take their research into external contexts through diverse KE mechanisms that range from CPD, to consultancy, to commercialisation. As a professional body for the sector we have long championed the value that our members help to bring to the UK economy. Our advocacy activities aim to challenge and change the often negative image that is associated with 'technology transfer' in particular. This masks a much wider range of economic and social impacts that our members help to realise.

Since 2015 we have worked with HEFCE to understand better the characteristics of good and effective practice in KE and support whole heartedly the work of the McMillan Group on which some of our members sit. We welcome the KEF as a next step in this work and will engage fully to represent our members' views as expert KE practitioners. We hope that we will have opportunities to test consultation outcomes in a working context.

In terms of quantifying knowledge exchange activity, although HEBCI data demonstrates annual increases in the quantity and income to universities from KE overall, it does not reflect an accurate picture of KE activity for most institutions and can encourage assumptions to be made on the basis of a single measure (often number of spin-outs per annum). We understand that there will be a separate assessment of HEBCI data as part of a wider basket of KEF metrics: we hope that conclusions reached in that review will also help to inform the design of the KEF, particularly in terms of understanding inputs and outputs, appreciating timescales for KE, and the sheer diversity of KE strengths across the UK's university sector.

We see the aims of the KEF as:

- Providing tools for universities to be ambitious, to learn from the success of others and to improve their KE performance.
- Giving external audiences - business, investors, government – in particular, confidence in the UK's universities to engage for economic and social impact.
- Putting knowledge exchange activity in the context in which it is carried out so that there is better understanding of strengths and weakness in performance across the UK; not just in terms of university 'supply' but also in terms of external demand.

These are all aims that PraxisAuril supports.

The Industrial Strategy White Paper has cemented the role of universities as ‘anchor institutions’ and clearly sets out their role in raising UK levels of R&D. It is a big role with high expectations; it relates to university mission, to internal resources and to external environments. The introduction of REF Impact has increased awareness of knowledge exchange and the KEF will force more discussion about how universities work with businesses of all kinds; for their benefit but also for the benefit of students and research activities. It will oblige us to examine the way we support enterprise and entrepreneurship and consider whether there are different routes to commercialising IP that will give the kind of uplift in activity that external audiences seem to expect. The KEF Concordat, which PraxisAuril members are also involved in, will be an important piece in terms of engaging university leadership in these discussions.

Q1. 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?

"Specific technology transfer policies adopted in any country or by individual universities are shaped by internal (institutional) and external (demand) factors – absorptive capacity, maturity of systems, technology sector specialisation, ecosystems development. There are no one-size-fits-all policies that are appropriate to every individual country or individual university" (McMillan, 2016¹)

While we support the idea of a KEF that will provide greater assurance to funders and policy makers, we are opposed to a system of metrics that would introduce standardisation across the sector or favour particular modes of KE. We need non-specialised audiences to understand why universities operating in the same geographical space - perhaps benefiting from an innovation ecosystem such as Cambridge or Oxford - can have very different outputs in terms of HEBCI data. (In our KEF discussions we tested ideas with members from Imperial College on the one hand, and University of the Arts on the other.)

HEBCI data presented as a national picture of KE activity can be used to make assumptions about a sector which is very diverse in terms of its research strengths, KE mission, resources and activities. We have advocated consistently for respect of sector diversity and un-hypothecated funding (i.e. HEIF) that supports it². Any new assessment tool must be fit for purpose across this diverse sector and avoid standardisation that might ignore the importance of economies of scale and critical mass, especially around research-derived KE, or fail to acknowledge a mission-driven focus on non IP-based KE. It has been suggested that a disciplinary

¹ ‘University KE Framework: Good practice in technology transfer’, HEFCE, 2016

<http://www.hefce.ac.uk/pubs/rereports/year/2016/ketech/>

² For a full list of consultation responses see <https://www.praxisunico.org.uk/resource/consultation-responses>

focus, similar to that of the REF, could be helpful to understand the different KE dynamics of different academic and industry sectors. This relates to points made about researcher motivation below in Question 2.

We know that HEBCI's annual cycle is prone to data spikes and restatement of income, activity that is initiated in one year will be reported in another, and some sections actually report inputs rather than outputs of KE activity. How will the KEF present meaningful trends in KE activity that will also capture the long-term nature of KE outcomes against inputs and help universities to track relative performance over time?

How should benchmarking be used?

Universities should be supported to play to their KE strengths but also be provided with a tool that can enable them to be '*aspirational*' (McMillan) and do more with the resources available to them, which are of course neither fixed nor unlimited year-on-year. The KEF needs to allow institutions to define a KE focus and benchmark performance against others with the same, or similar, as well as using predefined clusters such as by research intensity. Where there is a high concentration of a particular activity in a small number of universities (as the case for spin-outs) there should be a way for benchmarking against that high performance relative to scale.

"Clarity over the purpose and aims of the benchmarking tool is critical. There are a number of potential uses of benchmarking within KE: to investigate strategy, operational efficiency, process improvement, or outcomes. The approach taken by a benchmarking tool would be different to suit each of these outcomes..." (IP Pragmatics³)

HEFCE's Knowledge Exchange Framework project includes an expert study on benchmarking in KE authored by IP Pragmatics in which several PraxisAuril (then PraxisUnico and AURIL) members were closely involved as steering group members and many more consulted in the course of the project. Recent discussions about the KEF indicate that the conclusions reached in that report very much hold true today among our members and we strongly recommend that the report and its recommendations are reviewed by the Technical Advisory Group.

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?

³ IP Pragmatics 'Benchmarking for Knowledge Exchange' HEFCE, 2016
http://www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/Independentresearch/2016/Two,reports,on,KE/2016_kebench.pdf

In November 2017, Jo Johnson said that “...the KEF will act as a benchmark for universities to ensure they are **making the most of the opportunities available** and help ensure that the UK benefits from the research, skills and knowledge in the higher education sector.”

The KEF therefore needs to find a way to quantify opportunities for KE so that performance can be put into context, that is, assess how well universities are taking opportunities or why they are failing to. These are questions of supply and demand that affect all KE activities, but some more than others.

The recent Science & Innovation audits, in which many universities participated, must have a role to play here. As do LEP-based economic assessments, SME studies (notably those by the ERC), R&D intensity maps, and maps of public / private investment such as that published by Beauhurst⁴.

But there are many other factors that affect a university’s ability to attract customers: its research base (pipeline of ideas), its international standing (REF score, to indicate quality of research), its KE staff capacity or ‘sales force’ (most work in small teams of 7-10 people), its location (what sort of business ecosystem is it in?), its membership (e.g. of a ‘SETSquared’ type or industry focused consortium). KE does not just happen between UK universities and UK-based partners, so international interactions and markets also need to be taken into account as ‘opportunities’. The degree to which a university can take international opportunities may relate to, for example, the presence of an overseas campus, although this is more likely to be focused on teaching than KE. It may also relate to international alumni connections that can be leveraged for domestic advantage⁵. But for KE research reputation is probably the biggest ‘attractor’ in terms of demand outside those more personal or organisational connections. This is why REF outcomes are important to consider in the framework.

Demand Side

The focus of reviews in this area have focused on the role of universities, ascribing low levels of business R&D to the apparent low capacity of universities to work with business. But analysis of REF data in the Dowling Review demonstrated how a relatively few companies were contributing to a large number of impact case studies⁶. It also demonstrated how dominant certain industry sectors are as collaborators. The KEF could uncover more about the spread of demand for KE from external organisations by drawing on business innovation and R&D data. Or is an upward trend in, say, SME contracts (as captured by HEBCI) sufficient as a

⁴ Beauhurst 'Funding Innovation' <https://about.beauhurst.com/research/funding-innovation/>

⁵ For example, Cambridge Enterprise has recently launched a programme to link with alumni working in Silicon Valley to mentor UK spin-outs. See <https://www.enterprise.cam.ac.uk/usmentors/>

⁶ ‘The Dowling review of Business-University research collaborations’, July 2015
<https://www.raeng.org.uk/policy/dowling-review>

demand-side indicator? We should also look to Innovate UK and its Knowledge Transfer Network to understand the demand for university collaboration and how successful the KTN is at matching that 'opportunity' back to the research base.

Supply Side

The KEF metric exercise needs to encourage the right kind of behaviour. The IP Pragmatics benchmarking report (above) addressed the problems of benchmarking, potentially setting targets for performance and the danger of creating "*perverse incentives*" (p.69) . The danger with any metric is that it becomes a target and starts to inform behaviour. Universities have been criticised (again, notably in the Dowling Review) for focusing on short-term income above creating long-term relationships - this could be because the only current external metrics for KE relate to higher or lower levels of income and quantity of activity, rather than quality of engagement or sustained effort to achieve a certain outcome (consider the sustained effort required for each spin-out, for example). The latter is hard to capture other than in a case study approach however. It also needs customers to validate the 'supply side' input.

KEF metrics are intended to measure institutional performance rather than individual, but the Advisory Group should consider how evidence gathered through the REF Impact exercise can be used to inform KEF metrics. IP Pragmatics pointed out the "*influence that inclusion of impact case studies into the REF for 2014 is continuing to have on the way that HEIs monitor their activities and their ultimate effects on the world outside academia*". The REF meant, the report stated, that HEIs were collecting "*more data about the outcomes of their KE activities.*"⁷ The KEF should build on this to give external audiences more information about the range of impacts KE can have and also as a way of supporting a move towards creating long-standing relationships with multiple points of interaction.

Perhaps most important of all in terms of 'supply' is the research capacity within a university, the willingness and ability of academic staff to engage with the Impact and Knowledge Exchange agenda. If the KEF is going to incentivise institutions to "find a new gear" then it needs to both attract industry and also motivate academics to engage. The most significant reviews of academic engagement in KE have been commissioned from Professor Alan Hughes and team by the National Centre for Universities and Business (NCUB)⁸. The survey released in February 2016 found that "*the majority of academic researchers are committed to helping the British economy grow by engaging with business*". What is most striking about these surveys is the diversity of KE engagement and the different types of engagement prioritised across academic disciplines.

⁷ IP Pragmatics, p.27

⁸ "The Changing State of Knowledge Exchange" NCUB, 2016 <http://www.ncub.co.uk/reports/national-survey-of-academics.html#knowledgeexchange>

The authors emphasise the importance of understanding academic motivation for using *any* kind of external impact pathway, and the importance of sustaining engagement rather than just trying to create more interactions. Headline figures for KE tend to focus on 'low' levels of patenting, but those academics are also engaging with business in many other ways. Effective KE, then, is about the integration across the breadth of KE activity and how value is created at each point. This is inextricably linked with the personal choices of researchers themselves and institutional incentives and policies need to be careful to allow those choices to flourish.

In 2015 PraxisAuril (then PraxisUnico) commissioned a national survey of KEC practitioners and Higher Education institutions to explore the roles and experiences of KEC professionals and the institutional environments in which they work. The report presents findings on the KE resource within universities, their roles and responsibilities, levels of engagement, skills and training requirements. Repeated in 2017 it provides a snapshot of some of the KE workforce that helps to respond to demand-side incentives but also is a proactive force for taking research to external audiences. One of the most important findings we feel, in terms of helping audiences to understand levels of KE activity, is that most universities have KE teams of fewer than 10 people. This can mean that the academic:KE support ratio is high but also that many universities are likely to use third party companies to do some or all of their KE - particularly commercialisation. This is captured to some extent in HEBCI data but we would be very happy to provide the KEF team with underlying data from our own survey too⁹.

Finally, HEIF strategy analysis provides a forward look at capacities and capabilities that could be used to assess performance against ambition as set out for HEFCE.

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

PraxisAuril has trained almost 4000 KE professionals in a range of skills since it was founded, the majority in and from the UK. Demand for our 'fundamentals' course remains strong - an indication that the sector takes professional development seriously. We review course content regularly and respond to demand for more bespoke training (for a particular team or topic). In terms of benchmarking an individual's KE performance we support the Registered Technology Transfer Profession (RTTP) qualification as part of a professional development pathway. RTTP status is conferred by the international Alliance of Technology Transfer Professionals (ATTP), the organisation established to provide a global standard of professional achievement, of which PraxisUnico is a founder-member. Training has an impact on performance and training data could be incorporated into the KEF as a measure of intent to raise levels of performance and / or as a way of indicating

⁹ 'Knowledge Exchange and Commercialisation: the State of the profession in UK Higher Education' Research Consulting for PraxisUnico, 2015. <https://www.praxisunico.org.uk/resource/knowledge-exchange-commercialisation-state-profession-uk-higher-education>

that a certain level of skill has been attained by a KE team. The difficulty with using training data is knowing what is meaningful; in this respect the wide take up of PraxisAuril courses across the university sector could be used as a point of reference. Our training data could be analysed to establish which universities have or have not sent staff on courses, for example. There is training and education data held at the institutional level too of course that could be incorporated, such as; number of commercialisation courses run, academics trained in KE / enterprise, students trained in KE / enterprise and so on.

In 2018 PraxisAuril will launch an 'office review' pilot project to build on our current face-to-face training programme and draw on the knowledge of some of our most experienced expert practitioners in the UK and working overseas. It is a peer-review project to assess KE office performance, giving practical advice on organisational structure, commercialisation strategy etc to maximise supply and demand for KE. In time the project will provide contextual data on how universities are assessing their performance, setting targets, and defining KE strategy to achieve their overall KE mission goals. This is likely to incorporate looking at the KPIs that universities themselves use to measure performance, many which are captured in the PraxisAuril '*State of the Profession*' report referred to above¹⁰.

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

We think that is important to define the audiences for the KEF and what questions they want it to answer through visualisation. From our point of view, there is an issue around the reputation of 'technology transfer' which we hope the KEF will help to address. Income to universities from business community interactions (knowledge exchange) reached £4.5bn in 2015-16. But this number does not seem to provide the confidence that government in particular seeks; rather than celebrating that headline figure - which represents the whole sector regardless of resource, context or capacity – there is more frequently concern over the number of spin-outs created each year by a minority of HEIs. So we clearly need to find new numbers and / or another way of measuring performance.

HEBCI data is not the only picture of KE of course; HEFCE's studies on HEIF discovered high economic (£7 for every £1 spent) and non-monetary impact (raising the return to £10 for every £1), UUK has published numerous impact evaluations on behalf of the sector¹¹, and the NCUB's '*State of the Relationship*' report is into its fourth year of publication. Together these resources paint a powerful picture of the strength and diversity of UK KE. That is without including the 6,975 REF impact case studies from 2014. So what additional questions is the KEF trying to answer?

¹⁰ '*State of the Profession*' op. cit, Fig 4a, p.33

¹¹<http://www.universitiesuk.ac.uk/facts-and-stats/Pages/impact-of-higher-education.aspx>

An attempt to visualise trends in economic data affecting KE, including HEBCI, was presented by the NCUB in its 'University Collaboration Monitor' project launched in 2015 to complement its 'State of the Relationship' report (which is primarily case study based)¹². The tool positioned annual data against a five-year trend to increase understanding about the dynamics of KE activity and how it is funded; that if quantity was prioritised then quality might decrease, that if one funding stream was withdrawn that others would need to replace it. The tool was well received as a concept (it was presented to PraxisAuril Directors in 2016) but does not seem to have been widely taken up outside the NCUB.

5. Any other comments?

We have consulted with members to prepare this response. We are supportive of the exercise but naturally have concerns about its purpose and implementation. Properly designed it could be a useful tool for us to understand the dynamics of university-based KE and the context in which it takes place. University leaders are likely to consider KEF outcomes, alongside the TEF and REF, as the combined reflection of a university's strengths in teaching and graduate employment, of its research impact, its regional economic importance, its national standing and its international reach and reputation. Ultimately, though, KE is a people business and there is a risk that measuring institutional performance will fail to recognise this. A great deal of data and qualitative information is already gathered about university side KE performance (e.g. HEIF analysis, NCUB academic surveys, REF Impact data and HEBCI data). The well-regarded McMillan Review of Technology Transfer put UK practice at "world class standards". The challenge is to identify demand-side data that can put this performative information in context to help us all to understand where there is a need to improve performance overall and in specific KE activities. This performative improvement should apply to the demand (business) side as much as to the supply (research) side.

Finally, we also strongly recommend a test period (as has been done for the TEF) before introducing any new tool. This will enable KEF audiences to suggest improvements and also to be reassured about outcomes and benefits from the exercise.

PraxisAuril, January 2018. Please direct all enquiries to Tamsin Mann, Head of Policy,
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¹²NCUB, 'Collaboration Progress Monitor' <http://www.ncub.co.uk/state-of-the-relationship/university-business-collaboration-monitoring-tool.html> and <http://www.ncub.co.uk/reports/national-centre-collaboration-progress-monitor-jul-2016.html>