

## **REPORT OF 2011 ATN-GO8 SYMPOSIUM**

### **EXCELLENCE IN INNOVATION: MEASURING THE INNOVATION DIVIDEND**

#### **SECTION 1: BACKGROUND**

The ATN and the Go8 share a commitment - in the national interest - to producing research that is both excellent in and of itself and also benefits the broader Australian community. Critical to this commitment is the ability of our universities to assess reliably the innovation dividend of the full range of our research output. It is the intention of the ATN and the Go8 that the Excellence in Innovation (EIA) initiative will be a significant step forward in developing this ability.

In 2010 the first Excellence in Research for Australia (ERA) exercise provided a detailed evaluation of the academic excellence of research produced by the Australian university sector and both ATN and Go8 universities rated highly. The ATN & Go8 believe that in addition to ERA there is a need for an assessment of the innovation dividend and is looking to the EIA to be complementary to ERA and fill this gap.

Designing a mechanism to perform a comprehensive stock take of the innovation dividend of research is no small undertaking as there are very few exemplars available internationally. One such process is the Research Excellence Framework (REF) to be run in the UK in 2014, following a trial in 2010, which will measure the impact of research through a case-study approach. The EIA will look to leverage the lessons learnt from the UK experience – cognisant of the differences between the UK and Australian contexts - through appropriate representation on the project's Advisory Board. We are approaching the exercise with the aim of identifying the most workable and credible measure of evaluating the translation of research into practice.

The EIA trial exercise will comprise 12 participating universities – the five ATN universities (*Curtin University, University of South Australia, RMIT University, University of Technology Sydney and Queensland University of Technology*), four Go8 universities (*The University of Queensland, The University of Melbourne, The University of Western Australia and The University of New South Wales*) plus Charles Darwin University, The University of Newcastle and The University of Tasmania – and they will submit discipline based research data across a range of discipline specialities. The challenge of the design of the EIA will be to decide upon the nature of research data to be collected and the method of assessment that best evaluates the innovation dividend of the research.

In the national context the ATN-Go8 EIA may be seen as part of a national drive to improve the performance of the National Innovation System over the course of the next 10 years. In particular, the ATN & Go8 believe that it is incumbent upon the university sector to assess the innovation dividend of research through a unified approach and are thus jointly undertaking the EIA initiative.

On 4 November 2011, the ATN & Go8 conducted a one-day Symposium *Excellence in Innovation: Measuring the innovation dividend* bringing together a broad range of stakeholders in the Australian R&D sector. This document provides an outline of the program and reports on the discussions of the day.

## **SECTION 2: PROGRAM**

The program for the Symposium (Attachment 1) provided both international and local perspectives on and experience of the assessment of research impact. David Sweeney, Director (Research, Innovation and Skills) from the Higher Education Funding Council for England gave the keynote address and spoke on the issues - practical, methodological and political – of critical concern in the development of a national research evaluation system that includes research impact as one of the categories of evaluation.

There were presentations addressing methods of measuring the impact of research (Rymer on theoretical considerations, Hammond on indicators (including commercialisation indicators), Roy and Moody from CSIRO on impact and excellence guiding research programs and Parfitt describing the large scale ATN trial in 2005 held in anticipation of the Research Quality Framework (RQF)). Peter Laver spoke of the significant challenge in lifting Australia's productivity and of the need to grow the contribution of innovation to productivity and proposed a framework for evaluation, separate to ERA.

In the afternoon session 10 working groups were convened and each group assigned a discipline based research scenario taken from a series of both domestic and international examples. The working groups were asked to discuss the issues surrounding evaluating the innovation dividend for their particular scenario and to answer a series of questions posed (Attachment 2 provides the instructions to Working Groups). The working groups then reported back to the Symposium and which was followed by a panel discussion which concluded the Symposium. David Sweeney facilitated the panel and ensured that potentially thorny issues were brought up for discussion. Much of the material below is drawn from the working group reporting session and from the panel discussion.

## **SECTION 3: FUNDAMENTAL ISSUES DISCUSSED BY PARTICIPANTS**

It was not the intention for the day that there be unanimity of views, nor conclusions drawn, and this is reflected in the following notes, with clear instances of differences of views amongst participants. The plan was to encourage debate and to explore the scope and form of any EIA to inform the development of a proposal for implementing a trial in 2012. There will be input from an Advisory Board and a Technical Working Group, and both of these are currently being formed through the ATN and Go8.

### **PURPOSE OF EIA**

Participants asked

- 'What's the end game'; 'what's the rationale'; what are the benefits vs the costs?
- Are we seeking to identify impact or to reward impact, and if it is the latter how much will be directed to that purpose?

Possible answers, suggested by participants, to what we are trying to achieve included:

- Behaviour change by researchers i.e. greater attention to engagement and impact;
- Asserting the 'dividend'/impact to Treasury and Finance and the community;
- Rewards for successful engagement;
- A shift in research portfolios i.e. where research dollars are invested;
- To guide decisions about the funding of research.

It was suggested that by assessing the impact of the Australian research community there is potential to gain political and community support.

### **TERMINOLOGY**

A number of reservations were expressed about using the phrase 'the innovation dividend'. For some 'innovation' is just a component of 'research impact' and may not for example include societal impact and/or assign value to national interests. 'Dividend' was seen as a term from the financial sector that could imply that what is proposed is a financial assessment of the outcomes of research.

There was wholehearted support for using the phrase 'research impact' (based on a show of hands to the question of which phrase to use).

There was support for

- Addressing terminology more broadly, as discussed in James Moody's presentation i.e. having a common language.
- DIISR's definition of 'innovation' as 'ideas successfully applied', but not support for using it instead of impact.
- Starting with a broad definition of impact and refining it progressively.

It was suggested that the NHMRC has a definition for impact.

## **CONTEXT**

Some of the comments made included:

- Universities are a small part of the innovation system and so there are boundaries to what would be assessed i.e. innovation is not the preserve of the academy.
- We are competing for researchers in an international context, and compared to the US, Australia has more bureaucracy and this is another potential demand.
- Minister Kim Carr has announced<sup>1</sup> a feasibility study on possible approaches for developing a mechanism for evaluating the wider economic, social and environmental benefits of research.
- Australia's level of engagement with business as measured by the ABS is very low. (This analysis was disputed once account is taken of the structure of Australian industry.)
- Collaboration with industry, and achieving impact with industry, is not necessarily a question of scale e.g. Finland has high levels of engagement.
- DIISR is seeking to encourage greater engagement between business and universities.

## **RESEARCH EXCELLENCE AND/OR RESEARCH IMPACT**

Speakers and participants indicated that high impact research was correlated with excellent research and that it was unlikely that there would be high impact from research that was not excellent research.

It was suggested that there could be high impact research that was not necessarily written up in high quality publications e.g. a change in building standards for homes from research into cyclone damage.

## **ERA AND EIA**

Some of the comments made included:

- ERA values should not be embedded in EIA.
- The academy wants a separate impact measure and a separate rating for impact.
- EIA should be associated with ERA; panel members could be expanded to include end users; the case study needs the science to understand the impact process.
- There needs to be equivalence between EIA and ERA.
- Funding of the EIA process should be independent of ERA; there is otherwise a risk of cross contamination; there need to be independent assessors.

## **CARRIAGE OF ANY ASSESSMENT**

No agreement was sought or reached as to whom/which agency might have responsibility for any research impact assessment. The view was expressed a number of times that the ARC was not the preferred organisation for this role.

## **PROCESS OF ANY ASSESSMENT**

There were multiple expressions of support for the UK REF process (refer David Sweeney's presentation) e.g. as 'robust and engaged'; e.g. as having learnt from RQF and now providing input to the next phase in

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<sup>1</sup> <http://minister.innovation.gov.au/Carr/MediaReleases/Pages/MAXIMISINGTHEINNOVATIONDIVIDEND.aspx>

Australia. It was highlighted that the process is important and that it needs to be an engaged process, involving stakeholders and end users.

The scale of the REF process was also supported i.e. approximately one case study for every ten researchers.

### **DISCIPLINE BASED**

Generally while speakers referred to assessment via discipline groupings, there were questions as to whether discipline is the right grouping.

The question was asked if an EIA should include all disciplines or be selective and it was argued that to not include some disciplines would not be acceptable, given it could imply that the disciplines not included were not delivering impact.

The CSIRO presentations highlighted the importance of multidisciplinary contributions by researchers to their Flagship programs.

There was recognition, without resolution, of the importance of capturing impact across disciplines.

### **FORM OF ASSESSMENT**

Views expressed included:

- There is a growing base of international practice using case studies for this purpose.
- With time metrics can be easier; case studies require reflection.
- Case studies and anecdotes are important for describing the research but should not be used for rating.
- Pathway narratives of impact/innovation need to be provided.
- Need end user statements where possible.
- Include end users on assessment panels.
- Have broad committees for assessment, given that impacts might be outside the FOR that generated the research base.
- Triple bottom line measures are better considered by broad committees.
- Assessment panels should be multidisciplinary so as not to discourage the broader exploration of 'views of impact.'
- Give assessment panels some top flight examples of impact to inform their deliberations; some benchmarks to guide them about excellent and poor impact.
- Adopt a menu approach, with a base set of measures plus discipline specific measures.
- Do not make the list of indicators exclusive and allow the panel to respond to suggestions made to them by those submitting.
- The old RQF trial form is not useful, the British REF form is better.
- British REF format is about right for the humanities (they were considering REF case studies).
- Provide a framework with boxes for researchers to complete.
- Why are we not drawing on the CRC Impact assessment tool?

### **METRICS**

Several speakers spoke strongly in favour of assessment and there was support expressed for gathering quantitative information where possible. It was also suggested that quantitative measures alone would not suffice; that quantitative measures are not applicable to all disciplines; that indicators be used that are more general than metrics.

It was suggested that the EIA should avoid metrics that repeat ERA; need to establish only that there is a research base for the research impact statement.

Questions were raised as to how available measures of commercial outcomes might be if researchers are seeking this information from their commercial partners who are realising these gains i.e. will some information be commercial in confidence.

Questions of values were linked to measurement i.e. what is that we rate most highly.

There were participants who spoke of 'measuring research impact' while others spoke in support of 'assessing research impact'.

## **RELEVANCE**

Some of the comments made included:

- How do you rate 'impact' in a global context e.g. in telecommunications to be outstanding is to establish a spin-off company like Google. (However universities do not make money from these.)
- While commercialisation is one measure there are impacts on other sectors of the economy e.g. in telecommunications the impact of open source technology and impact on public policy including education, health etc.
- Consultancies per se are/are not an impact of research.
- One test could be 'proof by contradiction', i.e. 'if you took the research out (if it did not happen) what difference would it make'.
- There was support for the CSIRO conceptualisation of research plus engagement, uptake and adoption leading to triple bottom line outcomes.

## **LATENCY AND ATTRIBUTION**

The HEFCE REF (2014) requires specific examples of impacts achieved during 1 January 2008 to 31 July 2013 underpinned by excellent research in the period 1 January 1993 to 31 December 2013. It was agreed that adequate time frames were needed for impact to be realised and demonstrated. There was support for an outcomes 'window' of 4-5 years within a longer research window.

Given these time periods, questions were discussed of the attribution due to current researchers.

Other questions of attribution were also raised including

- The contribution of individuals to a group.
- The contribution of researchers who are members of a research team but external to the university.
- The contribution of PhD students, including when they have graduated and are generating their own work (in research, professional practice etc).
- Attribution to current location of researchers or to their location at the time of the research – can depend on the intentions of the scheme in terms of funding.
- Research done external to the university that has informed university research.
- Factors that influence impact, that are not research.

It was suggested that one way to address time frames would be to ask 'when did the activity start', 'when were the first outputs' and then 'what are the outcomes'.

## **VERIFICATION**

Participants suggested that HEFCE was using verifiability rather than verification and that the cost of verification would be too great.

Evidence could include a base set e.g. IP, plus testimonials (of which there could be a random audit), plus an independent list of names who could be consulted by the panel.

## **WORKLOAD FROM EIA**

Some views expressed included:

- Given the demands on top researchers, is this additional demand warranted?
- To get end user input, what demands will this make of end users and will this be reasonable?

- Workload for panels assessing case studies.

### LESSONS FROM THE CASE STUDIES SUPPLIED

Some of the comments about the case studies discussed at the Symposium included

- We did not understand the research underpinning the claims. How was it initiated? What was the research program? Who did what when?
- The information provided did not do justice to the research or the group (both of which were known to the participants reviewing that case study).
- There was not enough detail in the case study e.g. who is in the team? what was the research methodology? How are they linked with industry?
- Those completing the case studies had confused inputs and outputs.
- There was not a lot of evidence in the case study and so those reading it needed to believe the information provided, in order to make an assessment of impact.
- The link between the research and its impact was missing.
- Some of the case studies referred to prospective benefits and so were not helpful for the exercise.
- One humanities case study had public engagement e.g. BBC broadcast, but it was hard to know what impact there was on people.
- In several of the humanities case studies, making a comparative assessment was difficult e.g. while number of downloads were provided how does this 'web resource for grammar' compare with others available and what was its longevity?
- The form provided did not do justice to the case study. The information was limited by the structure/requirements of the pro forma.

### GOING FORWARD

Panel members were asked to nominate two things each that they thought were needed in going forward and their responses included:

- Simple and transparent process.
- Tight assessment i.e. if there is no evidence, there is no score.
- Define what game we are in.
- Get the rules right.
- Address the question of who will run any EIA.
- Behaviour change takes time e.g. DIISR has had little success to date in changing behaviour via their programs.
- Define why we want to do this.
- If we do this we have to be externally focussed.
- We need to engage the learned societies.

### SECTION 4: 10 MISSION CRITICAL ASPECTS OF THE EIA

As indicated by the above Symposium discussions summary, there was a wide range of issues canvassed by the Symposium and on many issues no unanimity. However, on some issues a form of consensus was reached and on others discussion identified mission-critical issues that need to be directly addressed and resolved in the design and implementation of an EIA.

1. **Purpose of the EIA** – a precise purpose for the EIA must be determined and enunciated so that the exercise may be designed and implemented to be fit for that purpose.
2. **Language of the EIA** – a specific use of language and terms needs to be developed to precisely describe the EIA. As examples the EIA would need to have precise definitions of terms such as end-user and categories of impact.
3. **Inclusiveness of the EIA** – all research disciplines must be included in an EIA as to omit any discipline is to designate it as having no/limited impact. A corollary of this inclusiveness is that the EIA must allow discipline specific models for evaluating impact.

4. **Measurement and assessment** – to provide a comprehensive and accurate picture of impact the EIA must be a combination of measurement by quantifiable indicators and assessment by qualitative indicators and case-studies.
5. **Innovation pathway** – the EIA must include an explicit notion of the elements/stages of a pathway by which research is translated into outcomes and impact.
6. **Excellence and Impact** – whether a threshold of excellence should be applied before research is considered in the EIA.
7. **External focus** – to what degree the EIA should apply an external or end-user focus to evaluating the impact of university research. An external focus means, for instance, including the spectrum of stake-holders at all parts of the EIA process and evaluating the quality of university research against the requirements of the broader Australian community.
8. **Feedback loops** – the EIA development should be informed by concurrent work in the impact space both domestically – including by government – and internationally, with particular reference to the UK REF.
9. **Administrative load** – the EIA should not be a sizable administrative burden on universities. This requirement argues for a selective rather than comprehensive evaluation of research for impact and a verifiable rather than verification approach to evidence supporting claims of impact.
10. **Administering organisation** – needs to be determined in a timely manner as the choice of administering organisation carries significant resource and logistical implications impacting on the timing and operation of an ongoing EIA.