Innovation Metrics Review Taskforce

Department of Industry, Innovation and Science

GPO 2013

Canberra ACT 2601

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Email: InnovationMetricsReviewTaskforce@industry.gov.au

Dear Dr Krisztian Baranyai

Glasshouse Advisory's submission regarding the Improving Innovation Indicators Consultation Paper

Glasshouse Advisory welcomes the opportunity to provide feedback and input on the Improving Innovation Indicators consultation paper.

As an intellectual asset advisory firm, Glasshouse Advisory assists businesses to identify and manage the value of their intellectual assets. We work with businesses and industry to develop ideas, accelerate innovation and commercialise intellectual property. This includes working with the public and private sector to provide them with IP analytics based on metrics that indicate the level and nature of innovative activities as well as the potential commercial impact.

Given our unique service offering, Glasshouse Advisory sits at the cross section of business, innovation and intellectual property and has a strong understanding of the importance of having accurate innovation indicators and metrics. Based on our extensive experience and understanding we are well placed to contribute to developing improved and accurate innovation indicators. Glasshouse Advisory's experience in working with both the business sector and Australian Government departments means that we have significant knowledge to contribute towards developing an understanding of how an innovation metric framework together with policy implementation may impact individual businesses, industry trends and Australia's global standing in the innovation landscape.

Glasshouse Advisory strongly supports the Federal Government's commitment to accurately capture Australian innovation via a review of the current innovation metrics. The consultation paper provides a comprehensive list of key messages from the target consultations. Our comments focus on key messages that we have identified aligned closely with our work as an intellectual asset advisory firm.

Please see below our response to the consultation paper, including specific recommendations as to example metrics that could be incorporated into an innovation indicator framework. We would highly value the opportunity to further contribute to the review process and to the development of a new innovation metric framework in future consultations and/or workshops.

On behalf of Glasshouse Advisory

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1. Do you agree or disagree with the key messages received from targeted consultations to date? Why?

We provide responses to the following selected key messages from the Consultation Paper.

We agree with point 2.4 that 'Measuring the stock and flows of intangible assets is important'. However, we note that further analysis and metrics on intellectual asset transfers and licencing (i.e. from Australia to overseas and vice versa) both within companies and between companies will be a valuable metric to indicate what intellectual assets are remaining within Australia and the ability of Australian companies to commercialise their innovation within Australia.

We agree with point 3.8 that 'Better metrics on innovation transfer and networks are needed'. This should include modelling talent outflows, particularly of Australian companies from different sectors moving overseas to develop and commercialise their idea. This can provide an indication of the level of ideation occurring in Australia compared to levels of commercialisation.

We agree with point 3.9 that 'Better metrics are needed on publication citations'. Although we feel there is value in measuring the impact of scientific research, we believe there is more significance in measuring the impact of a patent (e.g. through citation analysis) since this is a better predictor of the impact of innovations (this is in line with the key message in 3.7 Better Metrics on Innovation Impact).

2. Are there any other issues that fall within the parameters of the Review but which have not been raised in targeted consultations to date?

We have identified key issues that we believe have not been addressed by the Review in sufficient detail, namely, defining innovation, useability of innovation metrics, clarity around proposed innovation metrics and innovation metrics regarding the effectiveness of government programs (i.e. R&D tax incentive). These will be listed below as 2(a) to 2(d).

2(a) Defining Innovation

Innovation does not appear to be fully defined, at least not in this paper. We think this is a point worth making, as we find that innovation can mean different things to different people. For example, a university academic may have a different perspective on the meaning of innovation compared to an executive in a large corporate firm. In order to effectively measure a concept, a clear definition of the concept is a prerequisite.
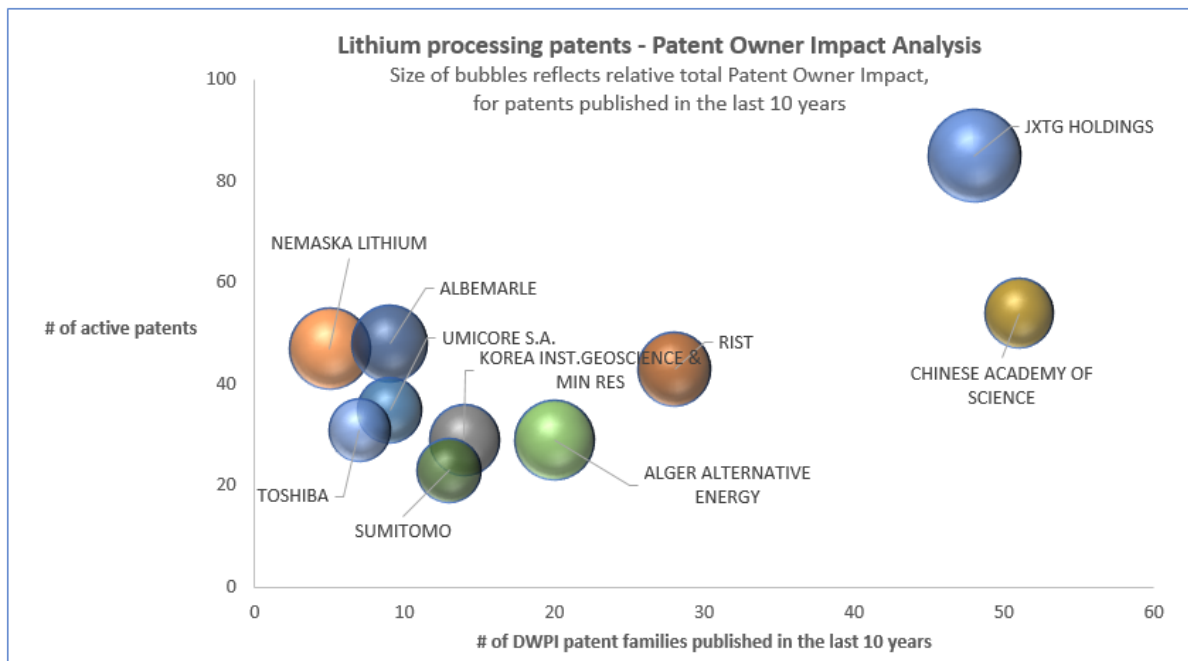
2(b) Useability of innovation metrics

From our experience, a major challenge in providing innovation metrics is the ability to convey an extensive analysis of large data sets and relationships between variables in a user-friendly format. It is critical to provide outputs that are visually attractive and easily understood so that decision makers at executive levels can use this data to inform the decision-making process. At the same time, the data behind the key outputs should also be readily available for analysts that are able to interpret these complex relationships.

In our experience, for the indicator to be valuable there needs to be an ability to break down data by technical field (or industry), geography, change over time and entity type (e.g. local vs overseas companies conducting research in Australia, large or small, research organisation vs commercial, etc.). Due to the varying degree of competition and thus differences in the speed of innovation uptake across industries, we highlight the clear need for innovation metrics to be split between industries.

To increase useability of these innovation metrics, an interactive platform could be developed to allow users to dynamically slice and dice data based on these important criteria

(please see the below example of an infographic which should be made available through a platform to allow users to select data parameters and variables).

Lithium processing patents - Patent Owner Impact Analysis
Size of bubbles reflects relative total Patent Owner Impact, for patents published in the last 10 years

(y-axis: # of active patents, 0 to 100; x-axis: # of DWPI patent families published in the last 10 years, 0 to 60)

Labels: JXTG HOLDINGS, NEMASKA LITHIUM, ALBEMARLE, UMICORE S.A., KOREA INST.GEOSCIENCE & MIN RES, RIST, CHINESE ACADEMY OF SCIENCE, TOSHIBA, SUMITOMO, ALGER ALTERNATIVE ENERGY

The paper highlights in points 4.2 and 4.3 that time lags and data inaccessibility hinders policy design and evaluation. We think that data from a source that can be easily or automatically updated should be favoured. At the very least it will be important to indicate the date at which the data is updated and noting any time lag issues for a data source.

2(c) Greater clarity around proposed innovation metrics

Innovation metrics are discussed under the heading '*3. Stakeholder comments on* metrics'. We note that there is a diversity of metrics mentioned and agree that metrics covering many different aspects of innovation are required. This would be in line with an open source model with certain levels of control and governance.

We do note that patent filing data, namely '*Number of international patent applications filed by residents at the PCT per billion GDP (PPP)*', and *Proportion of PCT patents with foreign co-inventors, %*' is mentioned in the referenced report *Australia 2030: Prosperity through Innovation,* published in November 2017. While certainly useful statistics, from our experience, there is a lot more that can be done with the over 100 million data points that make up the global patent literature. This could include considering the impact of patents filed by Australian companies on other companies, mapping patent citation data to provide a well-considered metric regarding the impact of a patent or patent portfolio, etc.

Further, we envisage that a range of data inputs could be used to create a comprehensive Innovation metric, for example:

- Number of patents filed and an impact measure.
- Number of R&D claims and quantum of value.
- Value of IP transfer pricing.
- Value of licencing of intangible assets (i.e. royalties).
- Amount of patent litigation activity and quantum of value.

- Amount of patent licensing activity and quantum of value.
- Amount of collaboration with universities and research institutes.
- Number of literature searches conducted by an organisation to check what others have done and to avoid duplication and infringement.
- Number of Trade Mark filings
- Number of new business names registered
- Number of new domain names registered.
- Number of new mobile applications (i.e. "Apps") published and downloaded.
- Amount of venture capital won.
- Number of commercial collaboration partners.

The above represent some examples of appropriate data inputs. From our experience, we would group these metrics into a hierarchical tree allowing users of the metrics to understand how all the measures contribute and are combined to produce outputs. This enhances transparency and the user's ability to isolate specific variables. We are happy to expand on this further, particularly our experience in using IP analytics tools to ascertain the significance and impact of patented innovations (as in line with point 3.7).

2 (d) Innovation metrics regarding effectiveness of government programs

The proposed new innovation metric framework should be able to measure the impact of government programs aimed at increasing additionality and knowledge spill-overs. For instance, better innovation metrics are required to assess the impact of the current R&D tax incentive program on business expenditure on research and development. Having an innovation indicator that measures the effectiveness of government programs to enhance innovation will allow for data-driven policy decisions to improve the additionality of these programs (i.e. R&D tax, Entrepreneurs Programme, Export Market Development Grant, etc.).

Further, an innovation metric that takes into account government programs could be a useful tool to measure private and public sector collaboration (e.g. through Cooperative Research Centre Programs). Collaboration between industry and universities is thought to be a particularly strong indicator of knowledge spillover and the diffusion of knowledge.

3. Where do you believe the Review should focus its efforts? Why?

The review should focus on building an innovation metric framework that allows for input from a wide range of experts throughout the development process and maintains high levels of transparency to ensure user confidence and accuracy of outputs.

It should also, wherever possible, focus on metrics that represent impacts of innovation, as well as inputs into innovation.

As stated above, we would highly value the opportunity to further contribute to the review process and to the development of a new innovation metric framework in future consultations and/or workshops.