Australian Government
Productivity Commission

Submission to the Rural Research and Development Council

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In January 2011, the Rural Research and Development Council ('the Council') released a draft National Strategic Rural Research and Development Investment Plan ('the draft plan'). The Council invited public comment on this draft plan, including from the Productivity Commission, before preparing a final version for the Minister for Agriculture, Fisheries and Forestry.

The Commission considers that it is well placed to comment on the draft plan.

- It has just completed an inquiry on the Rural Research and Development Corporations (RDCs). Though this inquiry focused on only part of the rural R&D policy framework, many of the issues germane to the efficiency and effectiveness of the RDC arrangements are relevant more broadly. Indeed, during the inquiry, the Commission received a considerable amount of input on broader framework matters.
- In 2007, the Commission issued a major study into public support for science and innovation that had been requested by the Government. This study looked at institutional and regulatory frameworks and how public funding programs should be designed and administered to deliver the greatest benefit for the community. As such, the study is of considerable relevance in a rural R&D context where the bulk of research funding comes from the public purse.

Because the Commission's final report for the RDC inquiry is yet to be publicly released, it has not been able to draw explicitly from that report. Thus the specific references in the submission to relevant Commission analysis from that inquiry relate to the draft report released in September of last year (PC 2010). However, this limitation has had no bearing on the thrust of the commentary below.

General comments on the draft plan

There are a considerable number of aspects of the draft plan and its foundations which, based on its own studies, the Commission supports, including:

- the considerable benefits for both the rural sector and the wider community from

soundly based investments in rural R&D. (Various evidence on the extent of these benefits is discussed in PC 2010, chapters 3 and 4, and appendix B)

- the role that collaborative research effort — including as appropriate with international entities — can play in improving research quality and allowing for investment in larger, potentially game changing, projects
- the role of rural R&D in helping to integrate natural resource management within farming systems. (Partly for this reason, in PC 2010 the Commission proposed that the Government create and fund a new non-industry RDC, Rural Research Australia)
- the potential to increase private investment in rural R&D. (Indeed, in the Commission's view, governments in Australia have been shouldering too much of the overall funding load, with the funding changes proposed in PC 2010 for the RDC program designed to gradually rebalance funding responsibilities within this one component of the framework at least. Some further commentary on the public/private funding interface is provided below)
- the need to engender a culture of evaluation and a commitment to robust performance evaluation across the entirety of the rural R&D framework. (To this end, both the proposed public funding principles and RDC operating principles in PC 2010 made specific reference to evaluation, with the Commission also putting forward some specific enhancements to the performance evaluation and monitoring regime for the RDCs)
- the difficulties created for effective policy making and program delivery by the fragmented nature of much of the rural R&D framework. (To build on current initiatives to address such fragmentation, in PC 2010, the Commission proposed a new 'low key' mechanism to better coordinate the Australian Government's funding for rural R&D)
- the difficulties created for effective policy making by the lack of robust data on funding and spending flows. (Thus, like the Council, in PC 2010 the Commission put forward a specific data improvement initiative)
- the need to support human capital development through high quality education and training systems.

However, the Commission has some concerns about the thrust of, and underpinning for, the Council's draft plan.

An over-emphasis on the contribution of R&D to the rural sector's performance

Consistent with what appears to be a general feature of rural R&D policy making in Australia, the 'big vision' role for rural R&D in the draft plan gives little weight to

means other than domestic investment in research for improving the economic, environmental and social performance of the rural sector. Even within a research-specific context, recent work by Sheng, Gray and Mullen (2010) suggests that overseas investment in R&D has had nearly double the impact of domestic (public) R&D investment on the productivity of Australia's rural sector. And, as noted by Keogh and Potard (2011), R&D benefits can be embodied in other products and technologies used in (but not explicitly developed for) the rural sector. For example, the internet provides easy access to real-time information, while the development of the satellite-based Global Positioning System has enabled the growth of 'precision farming' practices using automated tractors and harvesters. Likewise, improvements in farm equipment, pesticides, herbicides and veterinary chemicals used by rural producers are often underpinned by significant general product development work prior to any adaption specifically for the rural sector.

Moreover, looking beyond the research arena:

- Farm consolidation has enabled greater realisation of economies of scale and allowed better-performing producers to take over less efficient operators.
- Rates of educational attainment in the rural sector have been increasing, contributing to better farm management and greater awareness of the variety of means through which productivity can be improved.
- The removal of trade barriers and other regulatory impediments (for example, the liberalisation of labour markets and the loosening of controls on agricultural commodity marketing) has helped to reduce costs and increase competition, again stimulating improvements in farming practices and innovation.

Insufficient recognition of these other factors brings the risk that not enough policy emphasis will be given to other options for improving the productivity of the rural sector or enhancing its environmental performance. In this latter regard, it is particularly important that rural R&D policies do not deflect attention from exploration of instruments that would increase the incentives (financial or otherwise) for primary producers to directly take account of any adverse impacts their activities have on the environment.

Given this, in mapping out a set of public funding principles that should apply to all rural R&D funding programs (see PC 2010) the Commission indicated that all such programs should give explicit recognition to the notions that:

- investment in R&D complements and augments, rather than supplants, other drivers of productivity and performance improvement
- R&D funding support should be consistent with other policies and programs

designed to improve the economic, environmental and social performance of the rural sector.

In the Commission's view, similar recognition in the Council's final plan would provide equally useful context for policy makers.

The degree of direction

There will necessarily be an element of direction in any strategic plan. Moreover, in the rural R&D area, improved program coordination would have benefits. As was evident from the Commission's analyses for its RDC inquiry, the multiplicity of government funding programs for rural R&D has led to considerable policy fragmentation, unnecessary duplication of research effort and gaps in program coverage.

Nonetheless, as discussed in the Commission's report on Public Support for Science and Innovation (PC 2007, pp. 362–3), care is required to ensure that a concern to coordinate R&D programs and associated institutional structures does not unduly diminish diversity, flexibility and competition. There is also a broader risk inherent in strategic planning initiatives that governments will take on too great a role in directing specific research outcomes. As has been frequently demonstrated, overly directive approaches — even if premised on ostensibly worthy objectives such as taking a more strategic approach to decision making — can have significant shortcomings. In addition to involving decision making without information that is available to those more closely connected to the markets concerned, it can be difficult for governments to extricate themselves from failed endeavours. And when government is responsible for making most of the key decisions, the accountability of other participants in the system is commensurately reduced.

With these considerations in mind, it would appear that the Council's draft plan goes too far in the central planning direction. Some particular examples include:

- specification of how the overall rural R&D investment portfolio should be delineated on a share of spending basis between 'transformational investment', 'near term adjustment', 'capacity building in people' and 'international links'
- the nomination of various specific 'winner' activities in which the Australian Government should invest or focus its policy settings on, such as R&D related to bio-based production
- the concern to bring the whole 'paddock to plate' value chain within the planning net. As discussed in chapter 9 of PC 2010, for downstream value-adding activities the risk of private under-investment in R&D will typically be considerably less than for research related to the production of the raw

commodities. In these circumstances, the case for including downstream activities in the sort of directive R&D plan envisaged by the Council is weak. Indeed, with little reason for the Government to be involved in this area — other than through generally available R&D tax incentives — there would be few if any upsides to set against the inevitable risks and costs that would come with this sort of government involvement

The lack of a cogent basis for government involvement

The latter point is in turn reflective of a more general deficiency in the plan — namely the lack of a clear basis for determining when government should be involved in rural R&D investment decisions.

The primary rationale drawn on by the Council for its planning blueprint is ostensibly that the rural sector will face many challenges in coming years. Related to this, the Council appears to have unquestioningly accepted the food security catchcry that has come to dominate discussions on future rural R&D policy.

However, the many challenges that the rural sector will face in coming years are not of themselves a reason for government to take the lead role. In fact, as most sectors in the economy will face significant challenges — including from climate change, an ageing workforce, and intensified global competition — reliance on this 'rationale' would require government to take charge of investment decisions across a wide sweep of economic activity.

Likewise, food security considerations are not a sound basis on which to predicate government involvement in domestic rural R&D matters. As a good global citizen, Australia can and should contribute to efforts to help ensure that people have access to affordable and nutritious food, including through making more productive use of available agricultural resources. This may well entail government support for rural R&D as part of Australia's aid program. But as discussed in box 1, in the Commission's view, extending this argument to suggest that Australia's future access to food will be at risk unless there is heavy public funding support for domestic rural R&D is unjustified.

As the Commission identified in PC 2010, there are sound 'market failure' reasons for government to be involved in the rural R&D area through both funding and non-funding instruments (for example, by legislating for statutory producer levies). And, as alluded to above, once government is providing funding support, it is obviously desirable that there is effective coordination across individual funding programs so as to provide for consistency in approach and minimise unnecessary duplication of effort.

Box 1 **Should 'food security' be a policy concern?**

Notwithstanding the recent prolonged drought, Australia firmly remains a net exporter of agricultural produce — in 2007-08 exports of food and food products were considerably more than double the value of imports.

Nonetheless, some have expressed concern that if foreigners buy Australian land, the agricultural output produced using that land will invariably be sold overseas, resulting in less product choice and higher prices for Australian consumers in the future.

It may well be that globalisation of agricultural commodity markets will exacerbate the price pressures on consumers during periods of tight supply.

But such price pressures are likely to arise irrespective of whether domestic or overseas producer interests own Australian farming land. That is, wherever they are domiciled, producers will generally seek to sell their output in the market or markets that provide them with the greatest net return. Investment in rural R&D is unlikely to be an effective means of pushing against these commercial considerations.

More importantly, while prices may sometimes be higher, Australia's income level (and hence buying power) and the somewhat lower costs of selling produce domestically rather than in export markets, suggest that Australia is always going to be in a very strong position to satisfy its food requirements. Again this would be true irrespective of who actually owns the farming land. Additionally, any sustained upward pressure on food prices should in turn provide private motivation (both within Australia and overseas) for more efficient use of land and water resources to increase output. In this sense, R&D investment will be a consequence of the broader market environment rather than a driver of it.

Accordingly, in the Commission's view, the prospects of Australian food supplies 'running out' for this — or indeed any — reason appear remote.

In a foreign aid context, the risk of hunger and famine affecting developing countries provides a stronger reason for supporting measures to enhance food security, including through funding assistance for R&D in those countries. That said, R&D is only one of several options for improving food output. Of particular relevance in this regard are measures that reduce barriers to trade and improve market access, and which thereby improve the incentives for farmers in the developing world to increase their output. Indeed, as the Australian Centre for International Agricultural Research (the key Australian participant in managing rural R&D efforts for developing countries) told the Commission's RDC inquiry, without such market access, the benefits of scientific research are unlikely to be fully realised.

Moreover, insofar as Australia has an obligation to help feed people in other countries, as is currently the case, this help should be part of the international aid program administered by the Department of Foreign Affairs and Trade. (Funding for AusAID and the Australian Centre for International Agricultural Research are two such examples.) This would be a far more appropriate — and probably more effective — approach to addressing food supply problems in developing countries than funding domestically-focused rural R&D programs in the expectation that some benefits might flow abroad.

However, these rationales imply a more targeted role for government than is envisaged in the Council's draft plan — especially where public funding is involved. Specifically, as indicated in the public funding principles spelt out in PC 2010, the Commission considers that such funding support should be predicated on inducing additional, socially valuable rural R&D that, absent that support, would not occur. Otherwise, public funding will simply be replacing private funding at a net cost to the community because of the administrative and efficiency costs that attach to government revenue raising.

The Commission therefore encourages the Council to give much closer attention to the circumstances in which government involvement in the rural R&D area is likely to provide a net benefit to the community and to reconfigure its investment plan accordingly.

In turn, this could help to overcome the unwarranted presumption that seemingly underlies the draft plan that it is up to government, and the Australian Government in particular, to get rural R&D investment 'right'. While government clearly has an important role to play, as parts of the draft plan recognise there is much more that could and should be left to the private sector.

Notably, except in a few areas/industries such as in plant breeding, agricultural and veterinary chemicals and sugar, it does not appear that policy makers have typically treated the private sector as an integral part of the overall framework. Though this policy mindset is beginning to change, it needs to go much further if a similar change across the entirety of the farming community is to be achieved. In contrast to countries like New Zealand, there is still a sentiment in many parts of the rural sector in Australia that government should continue as a matter of course to do most of the heavy lifting. In its current form, the Council's plan would do little to change this perception.

Lack of supporting information and analysis

The draft plan reveals little detail about the analytical underpinnings for many of the Council's detailed findings and recommendations, including alternative approaches that may have been considered and rejected. It is highly desirable that, in the final version of the plan or in the supporting published documentation, this sort of analytical detail is provided. This would give the Government and other stakeholders the opportunity to satisfy themselves as to the robustness of the Council's conclusions and suggested future approaches.

Some more specific observations

Productivity trends in the rural sector

The Council has accepted the contention that productivity growth in the rural sector is slowing in both Australia and overseas (Council finding 1).

However, while trend productivity growth may have been declining in some other countries, it is far from clear that it is the case in Australia.

- For Australia, the contention is seemingly based on work by ABARES and others drawing on farm survey data for the broadacre agricultural industries.
- But as the Commission observed in its draft report on the RDC arrangements, productivity trends in the broadacre industries do not appear to be representative of what has been happening across the rural sector as a whole. Subsequent to the release of its draft report, the Commission undertook further analysis of productivity trends across the rural sector using ABS productivity data. This work — which is documented in the Commission's final report — indicates that the underlying productivity growth trend across the entire rural sector has been quite stable over the last 25 years.

Furthermore, it also unclear to what extent, if any, total investment in rural R&D has declined in recent years — thereby calling into question the other component of the productivity growth/R&D investment linkage in the ABARES work.

Given this, the Commission suggests that, when preparing its final plan, the Council be much more circumspect in what it draws from this and other empirical work linking productivity in the rural sector to past investments in R&D.

Target setting matters

The Commission likewise would encourage the Council to reconsider its position on broad 'outcome-related' targets. Specifically, the Council has proposed (recommendation 1) that investment in rural R&D be increased so as to 'double rural sector output over the next 30 years while consuming proportionately fewer resources'. Also, it has suggested (p. 18) that evidence of a reduction in public expenditure on rural RD&E as a percentage of the size of the rural sector 'is of great concern if Australia wishes to remain a globally competitive producer of rural products'.

In regard to the first of these targets, it is not apparent what considerations have led the Council to opt for a doubling of sectoral output over a 30 year timeframe. More importantly:

- The targets seem to have been set from a rural-centric view of the world, without regard to the alternative opportunities that there would be to gainfully employ research resources and the land, labour and capital involved in producing the output concerned.
- The linkage of the output target to increased investment in R&D leaves the impression that research is all that matters in examining how to improve the rural sector's economic, environmental and social performance (see above).

The Commission similarly sees 'research intensity' targets as being at best unhelpful and more than likely counterproductive. The push for such targets has emanated from the empirical work suggesting that greater spending on rural R&D would be beneficial. As indicated above, and discussed at length in PC 2007 and PC 2010, caution is required in drawing conclusions about the links between changes in productivity growth and changes in R&D investment.

Even if it could be established categorically that R&D spending in total were too low, this would still not indicate how individual policies should be changed to deliver good results from a higher level of investment. Nor would it preclude the possibility that public funding for particular policy programs was already too high. That is, the appropriate public contribution to individual rural R&D programs would still need to be judged against core 'market failure' rationales for public funding — and having regard to the likelihood that government funding would add genuine value in terms of the research outcomes delivered.

The risk is that research intensity targets could supplant this sort of analysis. Amongst other things, their use could open the way for putting additional government money into under-performing programs. Indeed, as the input from many of those participating in the Commission's RDC inquiry illustrates, any perception that total spending might be insufficient can quickly become an argument that all existing public funding programs should be inviolate.

With a policy framework in place that facilitates best use of available public and private funds, and timely and effective funding responses to emerging needs, that framework should, over the longer term, deliver a broadly appropriate level of total R&D spending. In these circumstances, there would be no need to speculate in advance on what that level of spending should be. Also, with such a framework in place, any increases in aggregate spending levels would be driven by specific needs

and effectiveness and efficiency considerations, as opposed to the notion that more spending is necessarily better than less.

Workforce capacity

As indicated above, the Commission concurs with the Council on the need to underpin rural research capacities with high quality education and training systems.

However, the Council's call for the Australian Government to 'reinvigorate' the rural research workforce seems to be premised on the proposition that government action to address current workforce challenges can and should be pursued on a sector-specific basis.

While there is undoubtedly scope for some sector-specific action, many of the workforce challenges impacting on future rural R&D capacities are common across the economy. In particular, the ageing of Australia's population will tighten conditions in many sectoral labour markets. This will focus more attention on how to get better value from the available workforce and how to boost education levels and labour market participation, as distinct from sector-specific initiatives designed to increase workforce numbers in particular parts of the economy.

Moreover, the experience has been that over time, even severe skill shortages in particular areas are typically ameliorated through responses within markets. That is, there will be upward pressure on wages and salaries which will usually lead to increased demand for training in the profession concerned. Specific skill shortages can also be eased through the employment of appropriately trained overseas workers (provided there are 'supportive' visa arrangements in place). And scientists trained in related disciplines could provide a further possible source of relevant workforce skills in this particular case. The key point is that where sectoral reallocations of labour resources would be of benefit not only to the recipient sector but also to the community as a whole, those reallocations will generally occur without the need for explicit government direction. Indeed, there is a risk that where governments seek to direct resources to particular sectors, they will create barriers to this adjustment process.

Hence, unless premised on identified market failures impeding efficient workforce adjustments, generalised calls to reinvigorate particular sectoral workforces should be approached with considerable caution. In its final plan, the Council should indicate what specific workforce-related market failures it has identified and how the changes proposed in the plan would address them.

Performance evaluation

As indicated above, like the Council, the Commission sees the need for much better evaluation of outcomes — both at the individual program level and across the rural R&D framework as a whole. This would have several important benefits, including from:

- providing policy guidance on whether available rural R&D funding has been delivering best value to primary producers and the wider community
- highlighting means for those procuring rural R&D to enhance the benefits from future research projects
- reinforcing the incentives for good performance through increasing the accountability of those involved in the policy making and research procurement and delivery chain.

However, the Commission has some concerns about the focus of the Council's draft proposal for a 'high level' system-wide evaluation process. In particular, in concentrating on outcomes and capacities, it does not seek to identify how government funding and other policy intervention is making a difference to those outcomes and capacities. As such, it is unclear that the results of such an evaluation process would be particularly helpful in indicating how government policies might be modified to deliver better results in the future.

Also, it is not apparent how the Council has balanced the benefits from better performance information against the costs of collecting it. As the Department of Agriculture, Fisheries and Forestry observed in responding to the Commission's draft report on the RDC arrangements, such costs cannot be ignored. Especially with a greater focus on what value government is adding, it would be useful for the Council to reconsider whether there are risks that the costs of the currently proposed evaluation process might exceed the benefits. One specific issue here is whether all of the suggested components of the Council's proposed evaluation regime are necessary — especially given the opportunities for periodic independent performance reviews to look holistically at outcomes achieved.

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