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22 June 2010

RDC Enquiry  
Productivity Commission  
LB2 Collins Street East  
Melbourne Vic 8003

ATTN: Yvette Goss

Dear Secretariat,

**The Australian National University response to the Rural Research and Development Corporations Productivity Commission Issues Paper**

The ANU is pleased to provide a submission to the Productivity Commission's Issues Paper on RDCs.

The ANU has a strong research base in regional and rural studies. Our researchers have expertise in topics varying from crop enhancement studies to natural resource management and social policy. The Fenner School of Environment and Society is strongly linked to this research area and is a key player in maintaining research capacity through multi-disciplinary research training related to rural and regional issues. The ANU is also host to The National Institute for Rural and Regional Australia (NIRRA) which links researchers from public and private institutes with industry bodies and government. The ANU's expertise in rural and regional issues is available for stakeholders in the RDCs to use in any proposed incremental evolution of the program.

Rural research and development should be a key strategy for the Australian Government. Rural industries are a major contributor to the economy and sustainable development is critical. The returns on public investment are potentially large in economic, environmental and social terms. Conversely, the cost of decreasing public investment is also likely to be great in terms of loss of resources, ecosystem services, and social capacity. The Rural Research and Development Corporations provide an important link in the R&D system between researchers, policy makers, and end-users of research. It is important to recognize the importance of such intermediate agents and 'honest brokers' within the R&D system.

Please do not hesitate to contact me if you wish to discuss this submission further or if ANU's expertise in this area can further assist the Productivity Commission in its inquiry.

Yours sincerely,

Professor Lawrence Cram  
**Deputy Vice-Chancellor**

## **Rural Research and Development Corporations Productivity Commission Issues Paper**

### **Submission by The Australian National University.**

#### *Terms of Reference*

The review will:

- examine the economic and policy rationale for Commonwealth Government investment in rural R&D;
- examine the appropriate level of, and balance between public and private investment in rural R&D;
- consider the effectiveness of the current RDC model in improving competitiveness and productivity in the agriculture, fisheries and forestry industries through research and development;
- examine the appropriateness of current funding levels and arrangements for agricultural research and development, particularly levy arrangements, and Commonwealth matching and other financial contributions to agriculture, fisheries and forestry RDCs;
- consider any impediments to the efficient and effective functioning of the RDC model and identify any scope for improvements, including in respect to governance, management and any administrative duplication;
- consider the extent to which the agriculture, fisheries and forestry industries differ from other sectors of the economy with regard to research and development; how the current RDC model compares and interacts with other research and development arrangements, including the university sector, cooperative research centres and other providers; and whether there are other models which could address policy objectives more effectively;
- examine the extent to which RDCs provide an appropriate balance between projects that provide benefits to specific industries versus broader public interests including examining interactions and potential overlaps across governments and programs, such as mitigating and adapting to climate change; managing the natural resource base; understanding and responding better to markets and consumers; food security, and managing biosecurity threats;
- examine whether the current levy arrangements address free rider concerns effectively and whether all industry participants are receiving appropriate benefits from their levy contributions.

### *Rationale for Rural R&D Investment*

Regional Australia comprises those areas outside the capital cities and includes more than 99 percent of the country's landmass. About one-third of Australia's population of 21 million people lives outside the capital cities. This region covers much of our agricultural, ecotourism and mining industries. In 2006, regional Australia contributed around \$65 billion, or about 67%, of the country's export revenue. For many Australians regional life is strongly associated with the national character. Public investment in rural Australia should be in line with the contribution made to Australian society and the economy.

Agriculture in Australia is an important contributor to the economy. Rural industries have many comparative advantages and are consequently strong in terms of international competitiveness, allowing them to grow despite decreasing terms of trade. The contribution made to productivity growth and the other spillover benefits of rural R&D to the wider community provide justification for public investment. However public investment in rural R&D has decreased as a percent of GDP (from 4-5% pa between 1978-86 to 3% pa in the last decade), and it is thought this has been partly responsible for reduced productivity gains in agricultural industries (Mullen 2010a,b). A number of RD&E outputs have contributed to productivity growth including technology shifts, mixed farming models, and education and leadership training (Mullen 2010a,b). As pointed out by Core (2009) nearly all sectors of the economy enjoy a high level of publicly funded R&D including those sectors with lower returns to the public good. Conversely, the public costs of not investing in rural R&D to mitigate resource degradation could be very large.

The Research and Development Corporations (RDCs) are responsible for around 30-40% of rural R&D. A recent review of the RDCs found that the RDC's portfolio returned \$11 for each dollar invested (CRRDCC 2010). Returns included \$5.5 billion in industry benefits, and \$5 billion in other benefits. The report highlights the effectiveness of this partnership model between RDCs, rural industry, government and research partners. Notable public goods are also delivered through this model such as improved biodiversity, increased carbon sequestration, and improved water quality.

### *Public and Private investment*

Private sector investment in agricultural R&D has always been low in Australia (less than 10%), although in 2007 it had increased to 20% of total agricultural R&D (Mullen 2010b). The level of investment is low for developed countries, and there is no indication that as public investment slows the private sector will compensate for the funding gap (Core 2009, Mullen 2010b). Private investment, even at moderate levels, can have positive marginal effects on productivity and social benefits in rural communities. Additional mechanisms should be provided whereby private funds leverage Government monies such as through the ARC Linkage Scheme and Cooperative Research Centres (CRCs).

The RDCs currently invest around \$540 million per year in R&D (including marketing) to improve the profitability and sustainability of rural industries and communities. The RDCs provide an innovative model for private and public collaborations with every \$1.00

contributed by the Australian Government, industry levies and contributions adding a further \$1.50, on average. The co-funding model shapes the research agenda towards relevant areas, while ensuring that the spillovers are captured by public and private endeavors providing far greater benefits for Australia than would otherwise be the case.

The argument for public co-investment is greater than that of spillover effects. The channelling of public and private funds through a coordinating entity adds value to the entire R&D system. Although basic research is a driver of innovation, there are feedback loops within the system and applied research can also be a source of innovation. Basic and applied research, and other steps in system or technological transformation, can be thought of as part of a system in terms of the contribution to design that each step brings, rather than individual steps catalyzing each other in sequence. No step is necessary and sufficient for innovation by itself. The rural R&D system brings together, through RDCs as intermediate agents, our policy makers, end-users, marketers, industry representatives and researchers providing an important mechanism for coordination and communication within this particular innovation system. This is fitting for extension models that treat extension as a learning relationship where information is exchanged in more than one direction (i.e. not just toward the end-user). The division of labour between the components of the system allows each to fill the niche for which it is designed.

The risks to this system include: that accountability drives funds away from risky research (this may be basic or applied) that may have long time lags prior to moving down through the innovation cycle; that basic and applied research are seen through too narrow a lens (for example basic research can be end-user orientated); and that RDCs as neutral brokers of research, extension and research translation are not seen as a necessary part of the innovation effort.

#### *The current RDC model*

The RDCs fund between 30-40% of annual rural R&D in Australia, which includes the majority of research that has direct industry benefits. There has been a greater shift toward commissioned and applied research in recent years with a corresponding shift toward funding state government rural research programs. As state government budgets shrink they become more integrated into the R&D system working somewhere between the RDCs as funders and regional universities as suppliers of research facilities and extension networks. The RDCs also bridge another important gap between the Federal Government and industry end-users. The dual accountability mechanism allows greater stakeholder influence on research priorities. Also of importance is the independence awarded by statutory status under the PIERD Act. This is critical in terms of addressing the needs of stakeholders and also in terms of credibility with end-users.

Accountability and governance arrangements can be improved. More streamlined whole of RDC outcome level evaluation through the Council of Rural Research and Development Corporations Chairs (CRRDCC) could reduce duplication of administrative effort while increasing the meaningfulness of reporting. The RDCs have made significant and positive steps toward coordinated reporting structures and continue to do so. The development of evaluation capacity also allows for more strategic research

investments by RDCs and should not be considered purely as a mechanism for accountability. It should be noted that evaluation should support the strategies and not define the activities; goal orientated should not become measurable-goal orientated. Board structures could be improved by included appointees based on expertise as well as those for industry representation. Ministerial appointments to RDC Boards have also caused some politicization of research agendas where individuals are linked to industries.

#### *Improving the RDC model*

Four main areas that the system currently does not address well are:

- (i) cross-sectoral coordination and attention to underlying challenges and opportunities;
- (ii) supporting social science research;
- (iii) encouraging innovative R&D;
- (iv) international collaboration.

(i) The RDCs provide a valuable tool for engaging across sectors which is stymied by the current model, particularly with the closure of Land & Water Australia (LWA) and the budget cuts in Rural Industries RDC (RIRDC). Recognising that regional development is a trans-disciplinary and cross-sectoral venture is vital for integrated research which provides the best and broadest return on research funding. In addition to better coordination in setting funding priorities, greater effort and coordination in communicating and translating the outcomes of the research effort is required. Once again, recognition of the whole R&D system is required. Notably state governments are turning more to their regional universities to deliver extension services. The public good RDC LWA took on a coordinating role that has not as yet been replaced. Better coordination of data collection and evaluation/reporting along with more open channels for cross-industry research would be beneficial. There are examples of successful cross-sector programs such as Grain and Graze.

(ii) Social research is not currently adequately provided for nor integrated into the current model. In the past, a number of the RDCs including LWA, RIRDC and Grains RDC (GRDC) have supported social science research of policy relevance. This research has gone beyond industry-specific research to include, for example, consideration of social issues of importance to rural communities as well as issues relating to international concerns such as policy developments in the EU. The loss of LWA and the reduction in RIRDC's capacity has reduced the support for social research, also brought about by the down-sizing of the Social Sciences Centre within the Bureau of Rural Sciences. This would appear to be inconsistent with the government's broader rural policy approach, for example its inclusion of the social impact of drought in its recent drought review. Indeed it is inconsistent with the broader Government objective of delivering public goods into society. Rural industries are an integral part of the communities and environment in which they are placed. There is much potential for innovation in addressing issues and recognising opportunities through research that crosses sectors and disciplines. The results of R&D investments are not optimized unless there is a good understanding of the social and cultural aspects of the uptake, be

it among people on the land, or consumers, or the R&D community itself. Policy makers and the public are key stakeholders and engaging with them will be key to implementing research innovations and policy.

It is of note that the Social and Institutional Research Program (which included indigenous and cultural aspects) run by LWA was ground-breaking in its goal to connect policy and social research into natural resource management. To date there has been a significant failure to effectively engage both Indigenous Australians and people from linguistically and culturally diverse communities into the mainstream of Australian agricultural life, including employment and training. Health issues and demographic patterns in rural communities are also frequently overlooked when considering rural R&D and yet integral to successful and healthy community structures. Considering the health and demographic patterns of rural communities should also be in the agenda, including the health workforce in rural areas. The Australian Primary Health Care Research Institute (APHCRI) hosted by The Australian National University is an initiative of the Australian Government which acts as a hub providing linkages between Government, researchers, health providers and the community. It includes programs in rural and remote health provision and Aboriginal and Torres Strait Islander health provision and so is well placed to comment on appropriate strategies for integrating health and demography into rural R&D.

(iii) Currently innovative research is not well supported. The Innovation Call of LWA was one of the few blue-sky funds available for research in this area. Break-throughs in research come from investment in innovative and riskier research. Innovative research has the potential to provide Australia with transformative changes to rural industries rather than incremental change. It is important to recognise the value of investing in research that may have longer lead times to outcomes but has transformative potential.

The risk within the current system is that researcher time is directed to problems that follow economic signals. High risk research does not necessarily follow economic signals in a way that attracts private investment. Tying RDC funds too closely to these economic signals, and not taking into consideration social and environmental signals, will diminish investment in high risk research and research that delivers high returns to society. The potential costs of insufficient spillovers in the social and environmental platforms in rural R&D justifies optimising the public and private investment through RDCs. Investment through an intermediate agent also facilitates co-investment while mitigating information asymmetries as the intermediate agent, in this case the RDC, is accountable to both parties. Public funding allows RDCs to engage in riskier research projects that private firms would not be able to invest in. RDCs also have the capacity to act as a filter for low quality projects allowing private funds to be investing in risky but high quality research. The evaluation capacity and social capital of RDCs is of importance here as they must be able to provide good quality signals regarding research investments (Kleer 2008).

(iv) Another gap is tapping into the international R&D arena to provide spill-in benefits. LWA used to provide travel scholarships to bring in expertise from abroad but it is not systematically built into funding programs. The recent Parliamentary Inquiry should

produce some appropriate mechanisms for increasing collaboration and should be considered in the RDC model.

#### *Strategic Investment and Funding levels*

More informed and strategic cross-sectoral forward planning would assist in identifying areas where greater investment is needed, including building capacity. A coordinated approach would also assist to identify and manage risks. Providing Innovation funding on identified areas of likely/possible future importance or cross-sectoral importance is more likely to create transformative shifts than incremental R&D.

The scope of rural R&D has expanded to include research areas with a broader range of economic, social, and environmental impacts such as the environment, nutrition, food safety, and bio-energy amongst others. Declines in public investment in rural R&D will drive R&D toward economic rather than social and/or environmental signals. The falling rate of growth in investment in rural R&D has built in time lags that will put the economy at risk of productivity losses for several decades. In addition, inadequate investment in natural resource management and social capital will result in loss of vital resources and expertise that may take several decades to rebuild, where recovery is possible. Built into the RDC model is a driver for productivity increases in industry but also for increases in the productivity of R&D outputs – this is measured through the delivery of economic, social and environmental goods and delivered through extension networks. Co-investment of public and private funds through an intermediate agent allows us to improve the efficiency of our R&D by providing evaluation, extension, and program management skills and optimising return on investment through balancing of project risk against potential returns and project quality. Through this model industry sees greater potential productivity gains while maximising spillover benefits to society.

A necessary consideration in the RDC model of matching funding is contingency arrangements for years in which levies are lower. The allocation of Government funds based on a three year rolling average and the ability of industry based RDCs to build reserves allows critical R&D in years where levies are reduced, for example through drought.

We would not advocate, as suggested in the paper, that the RDCs are awarded public funds based on a contestable grants system. This would only serve to increase the proportion lost to overheads and administration. In addition it would decrease the RDCs ability to invest strategically and decrease their agility in terms of being able to respond quickly to changes in their operating environment. Lessons learnt from the use of a contestable grants system in the University sector indeed reflect that administration costs are unacceptable and the ability to shape the research agenda strategically is lost.

#### *The R&D system*

Commonwealth and State Governments have reduced their share of agricultural R&D (as a provider rather than funder) in recent years. The RDCs in general may be thought to contribute to the shift in R&D provision toward Universities and the private sector, rather

than State and Commonwealth Governments, through their use of Commonwealth and levy funds to purchase R&D services. The risk of investing through RDCs and CRCs is a shift to commissioned research at the expense of riskier research which may provide large scale and longer-term benefits. As already mentioned capacity and innovation are essential to realise transformative shifts in the sector. Greater productivity will be achieved through investing in the people, skills and research that support our rural industries.

Capacity building must be an integral part of any investment plan in rural R&D. There is a clear shortage of skills in many areas, and generally in terms of methodologically skilled individuals who can work across sectors. It should be noted that the scholarships programs of several RDCs have been very significant (even if always limited). Greater capacity building among researchers with a focus on rural and regional issues could either be in the form of RDCs considering specific projects for funding or could be the provision of a number of scholarships to be allocated on a similar basis to the APAs where the best students working on rural and regional issues in any discipline are supported.

There is clear potential for national coordination in graduate training in some sectors, such as soils. The National Forestry Masters Program (which is fragile financially due to uncertain industry commitment although all support it) is an excellent model. Another successful model of addressing professional workforce in rural areas are the rural immersion health (predominantly medical) programs, now running for 10 years and with positive outcomes. This model could be expanded to other professional training. Targeted investment in scholarships by the Government to address our shortage of professionals in the agriculture, fisheries and forestry sector would replenish the professional body.

Better articulated priorities from RDCs would provide a clearer path for industry engagement, perhaps similar to the ARC Linkage model. This demand driven research should be complemented by funding set aside for inquiry-driven blue sky research. This produces two funding streams – 1) demand driven with defined outcomes and shorter timeframes to realisation; 2) enquiry driven with uncertain outcomes and longer timeframes to realisation but potentially greater rewards.

In addition to the above, systematic collaborations between R&D funders and research institutes would provide Australia with the best possible policy in response to rural issues and the best possible position to be proactive in terms of its policy. More active engagement of the research community would decrease the burden on maintaining in-house specialist knowledge on the breadth of topics relevant to rural research. Research communities have an important role to play in research translation as they are well-linked into Government, industry and the community. Support of our researchers and research infrastructure is vital for sound policy decisions in a global and national setting. The National Institute for Rural and Regional Australia (NIRRA) and The Fenner School of Environment and Society at The Australian National University are actively engaged in trans-disciplinary research with a wealth of expertise of transforming research into policy. NIRRA is well positioned to work with the RDCs to provide a portal into a consolidated database of research funded by the RDCs.



### *Industry and public benefits*

The review of the RDCs using return on investment methodology clearly demonstrates that commercial interest and public goods are not mutually exclusive (Chudleigh *et al.* 2007, CRRDCC 2010). An integrated approach to evaluation that considers the triple bottom line of research demonstrates the importance of treating rural R&D as part of a system and not confined to any one sector. As indicated in the points above, greater preparedness would be achieved through greater investment in innovative research and more systematic collaborations between Government, researchers and industry to identify areas of need for investment, research, and capacity building.

Limiting consultation to identified peak industry bodies has the potential to exclude alternative views from the process. Levy payers are in essence shareholders in the RDCs and the governance structure could reflect this in some way rather than relying on groups that have historically represented the industry. In some industries, such as grains and wool, industry leadership structures are currently contested and in a state of flux so there is need for caution in identifying a particular group as representative of industry.

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