Queensland Government Submission to the Productivity Commission review of Rural R&D Corporations

Queensland Government

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KEY POINTS

- **The Queensland Government believes Australia's unique Research and Development Corporations (RDCs) Model has been a major contributor to productivity growth in the rural sector, as well as social and environmental outcomes beyond the farm gate, and should be maintained.**
- **The Queensland Government is supportive of any identified feasible enhancements that improve the efficiency of the model and allow for more investment to be devoted to Research, Development and Extension (RD&E).**
- **The rural sector has unique characteristics which justify at least maintaining, or ideally increasing, current levels of public funding for RD&E. The Queensland Government does not support any overall reduction in Commonwealth funding to RDCs.**
- **There needs to be a greater focus on strategic priority setting which better links to the National RD&E Framework.**
- **Greater emphasis on mechanisms which facilitate RDC investment in cross-sectoral Research and Development (R&D) projects is required.**
- **More RD&E investment should be directed to support tropical agricultural development.**
- **The administrative processes across RDCs need to be reviewed and more uniform processes with reduced administrative burden introduced.**

Introduction

The Queensland Government is pleased to have the opportunity to respond to the Productivity Commission Inquiry into Rural Research and Development Corporations (RDCs) in Australia.

The Queensland Government recognises that research and development (R&D) is instrumental in driving increases in productivity in the rural sector, with a flow-on benefit to economic growth and maintenance of economically sustainable regional communities. It also benefits consumers in the form of higher quality, lower-cost food and fibre products than would otherwise be the case. The Queensland Government maintains extensive rural R&D programs in collaboration with RDCs. These R&D and associated extension programs provide support through applied science and extension in the livestock, horticulture, grains, forestry and fisheries industries. These programs are focused on the entire value chain to enhance long-term industry competitiveness and generate improved environmental and social outcomes. The R&D is underpinned by strategically driven science and science partnerships that

include a strong focus on cross-sectoral technologies, particularly in the areas of biotechnology, climate modelling and adaptation, and environmental sustainability.

The Significance of Rural R&D and Agriculture to Queensland

Food and fibre industries are the world's oldest largest and most essential industries. Australia has a comparative strength in agriculture and Australia must ensure that its comparative strengths are not taken for granted but supported for the benefit of current and future generations.

Rural industries, along with the mining and tourism industries, are the driving force of economic success in Queensland. The State has achieved an average annual rate of growth that has outperformed the national economy over the past two decades. Over the period June 1990 to June 2009, Queensland's economic growth averaged 4.5% compared with 3.2% for the nation.

Queensland is also the most decentralised state in the nation with over half of its population living outside Brisbane. Rural industries and regional economies are integral to Queensland's economic performance and the health of these economies underpins the performance of the State economy. Social cohesion and a diversified economy are other important outcomes of a decentralised population and strategically distributed food and fibre production systems.

R&D provides a key source of competitiveness for rural industries and regional economies. The impact of improved productivity and the associated social and environmental outcomes of R&D extend well beyond the farm gate.

In reviewing research, development and extension in the Queensland food and fibre sector, the Queensland Smart State Council indicated expected growth for primary industry production in Queensland of 3.2 per cent per annum in the short-term (Smart State Council, 2008). Based on this growth forecast, the Smart State Council projected that the output of primary industry production in Queensland would rise to $15 billion by 2013-14. The Smart State Council forecast acknowledged that it did not take into account growth opportunities in areas of value-added products such as new food and fibre products, biofuels, advanced biomaterials, technologies and services, all of which provide potential for continued economic and social prosperity.

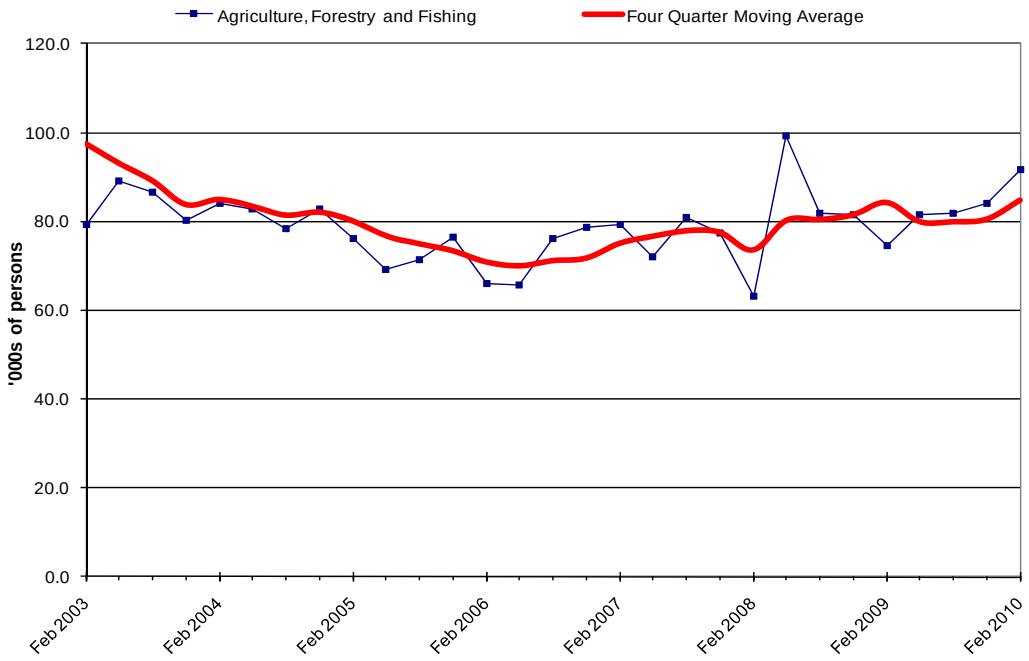
The significance of rural industries to Queensland is evidenced by:

- In 2007-08 there were 26,159 agricultural establishments with a total area of farms of 1.41 million square kilometres or around 80 per cent of the total area of the State (ABS, 2010).
- In 2009-10 the total gross value of production of Queensland's food, fibre and foliage industries (including the value added at first stage processing) was estimated at $13.7 billion with the major sectors being beef, horticulture and

sugarcane farming (Department of Employment, Economic Development and Innovation (DEEDI), 2010).

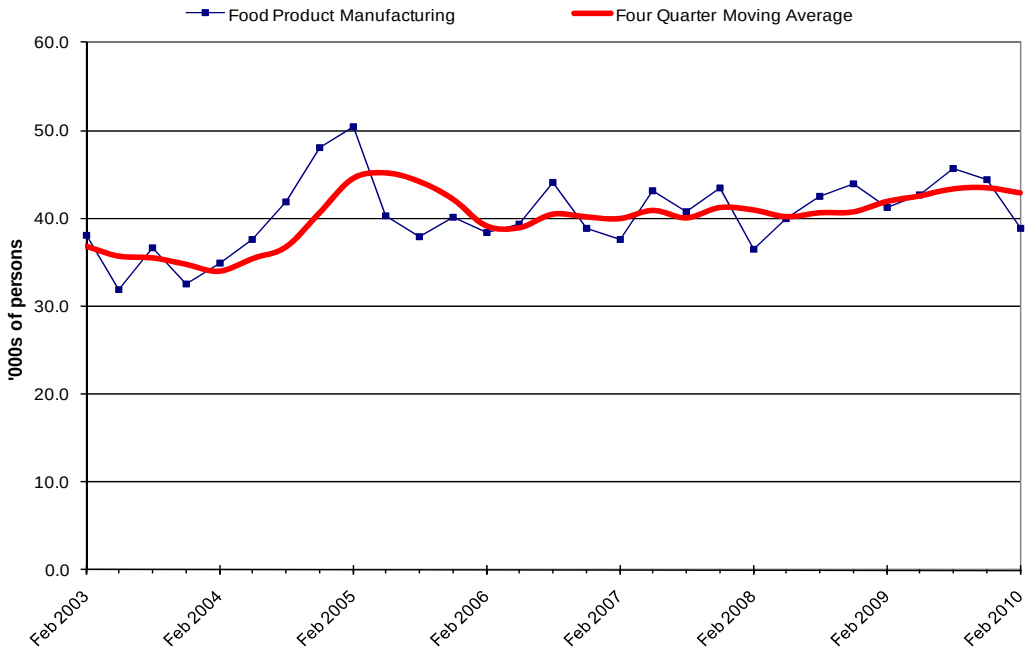
- Farms also undertake a significant portion of current natural resource management which enable improved environmental and social outcomes.
- In 2007–08, Queensland's primary industries exports were valued at $6.1 billion, accounting for almost 17% of the value of Queensland's exports. Half of the value of Queensland's exports came from the state's livestock industries (DEEDI, 2009)
- In the year to February 2010, direct employment in agriculture, forestry and fishing in Queensland was 84,800 persons (**Figure 1**) or 23.7% of Australian employment in agriculture, forestry and fishing. There was a 0.6% increase in employment compared with the previous year in Queensland, and in contrast to a 5.6% decline nationally.
- In the year to February 2010, direct employment in food product manufacturing in Queensland was 42,900 persons **(Figure 2)** or 22.1% of Australian employment in food product manufacturing. There was a 1.0% increase in employment compared with the previous year in Queensland, compared with a 4.8% decline nationally.
- In the year to February 2010, direct employment in agriculture, forestry and fishing accounted for over 10% of total employment in four of eight Australian Bureau of Statistics (ABS) labour force regions outside of Brisbane in Queensland, including Darling Downs-South West (16.1% of total employment), West Moreton (15.1%), Wide Bay Burnett (13.8%) and Northern-North West (13.2%)

Figure 1: Employment in Agriculture, Forestry and Fishing for Queensland to February Quarter 2010



Source: ABS Labour Force Survey by Industry Time Series for Queensland

Figure 2: Employment in Food Product Manufacturing for Queensland to February Quarter 2010

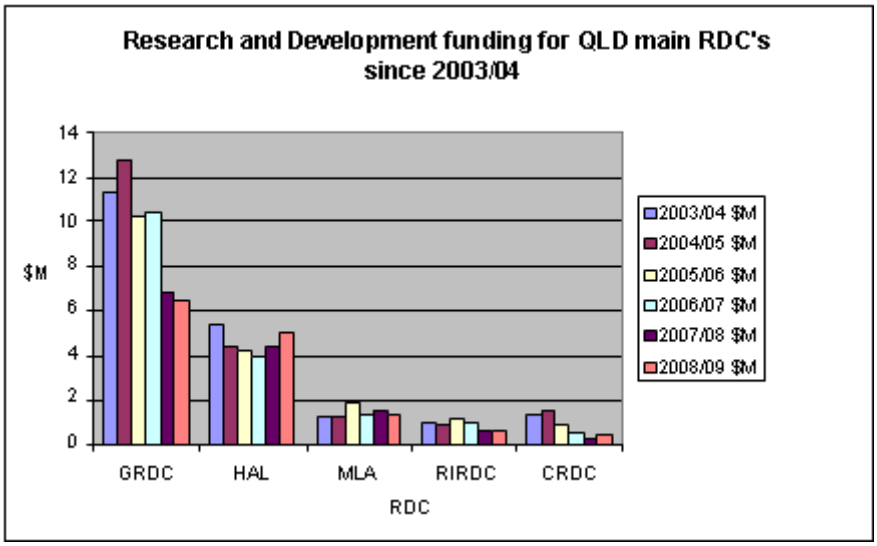


Source: ABS Labour Force Survey Cat: 6291.0.55.001

R&D Funding in Queensland

The Queensland Government continues to implement extensive RD&E programs to support and boost rural industries of relevance to Queensland. In 2008-09 the value of R&D for the rural sector undertaken by DEEDI amounted to $103.6 million. The Queensland Government contributed 70 per cent of the funding, with the remaining 30 per cent contributed by external sources, such as RDCs, CRCs, private industry and the Australian Centre for International Agricultural Research. Funding provided directly by the RDCs in 2008-09 amounted to $16.1 million, with additional funding provided indirectly through collaborative partners and CRCs. Details of the direct funding provided by the major RDCs over the past six years are provided in Figure 3.

Figure 3: RD&E funding from RDCs since 2003-04



Source: DEEDI

Since 2003-04, Grains Research Development Corporation (GRDC) has provided the largest proportion of the RDC funding followed by Horticulture Australia Limited (HAL) and Meat and Livestock Australia (MLA). Funding received from GRDC declined significantly in 2007/08 following privatisation of significant aspects of wheat breeding R&D previously funded jointly by the Queensland Government and GRDC. Funding from HAL has remained fairly stable between $4m and $5m and is mainly focused on the sub-tropical and tropical fruit industry. The MLA funding includes only direct funding to DEEDI. DEEDI also receives a significant amount of indirect funding from MLA through the Beef Cooperative Research Centre (CRC) and collaborative partners. Overall, the total level of funding from the major RDCs has been declining since 2003-04 (**Figure 3**).

In 2007, total expenditure by the RDCs on traditional production agricultural R&D (excluding the fisheries, forestry and energy RDCs and Land and Water Australia) was A$478 million (2008 dollars), which is almost 60% of total public expenditure on agricultural R&D (Mullen, 2010). Some of this investment by the RDCs is directed towards the processing sectors rather than production agriculture and some is directed to environmental outcomes (Mullen, 2010). If these investments outside production agriculture are assumed to amount to approximately one third of the total, this would imply that the RDCs are funding 40 – 50% of R&D in production agriculture in Australia (Mullen, 2010). About half of these RDC funds are contributed by farmers (Mullen, 2010).

Role of Government Investment in Rural R&D

There is a strong case to maintain a focus on productivity improvement in rural industries in order to maintain and improve international competitiveness, which will underpin the contribution to the broader economy and national wellbeing. Environmental and social outcomes depend on economic viability of rural industries. If investment was left to market forces without any government intervention, then it could be expected that there would be significant RD&E underinvestment in the sector due to the structure and disparate nature of the industries ie. a market failure.

Essentially, a market failure occurs when the allocation of goods and services by a free market is not considered to be *efficient*. In other words, there is potential for public sector intervention to significantly improve the allocation of goods and services – in this case, the benefits that result from investment in rural R & D.

This intervention should only occur when there is an identifiable market failure *and* when it can be proven that intervention will lead to an improvement in efficiency. This will most likely be when the market failure is big (i.e. there is evidence of a significant problem) and previous government intervention has proven to be effective. It should also be noted that this intervention is more likely to be successful when it addresses the cause of the market failure, and where it seeks to improve the functioning of the market rather than supplanting it.

Rural R & D investment has some characteristics that suggest a competitive market will likely not deliver the most efficient outcome. When a consumer receives a benefit from a good or service without having to pay, there exists a *free rider problem*. Further to this, when the actions of one consumer in a market impose a cost or benefit to a third party without any level of compensation for this consumer, an *externality* is said to exist. In the case of rural R & D investment, a positive externality occurs, causing the market to undersupply these goods and services.

The government plays a central role in ensuring that the benefits associated with rural R & D are maximised (both in terms of public and private benefits) and that the highest level of efficiency in the marketplace can be achieved. For example, the market failures associated with research and development are positive externalities. If private benefits are frequently less than the social benefits, the market will under invest in research. This could occur if a research firm in the rural R & D industry is unable to appropriate all of the benefits of their research for themselves. This may be the result of a competitor being able to copy the findings of the research following the release of a new product. There is an externality argument for public sector intervention, as well a further argument for the use of intellectual property rights in rural research and development.

The relatively small scale of Australian agricultural industries in global terms and its unique production conditions limit the attractiveness of the Australian market for

development of technologies by private sector investment. As a result, there is a need to actively build international R&D linkages and to invoke other mechanisms to meet the priorities in Australian R&D. This is particularly important in tropical agricultural R&D where there are significant opportunities and scope to achieve further economic development.

The impact of improved productivity and environmental outcomes from RD&E in the rural sector extends well beyond the farm gate. The impact is significant in downstream industries including food processing as well as rural communities. RD&E contributes to maintaining the competitive advantage of the rural sector and assisting in maintaining its "clean and green" image.

The Strategic Direction of R&D in Queensland

The Queensland Government is committed to implementation of the National RD&E Framework which will result in specific research providers taking leadership for investment and maintenance of R&D capacity in relation to particular sectors. Queensland for example is committed to a lead role for national R&D in beef, summer grains and pulses, tropical fruits and vegetables, fisheries and aquaculture, and tropical forestry and sugarcane production.

Under its Fresh Approach initiative, the Queensland Government is also building a strong R&D capability through university partnerships. It is creating strategic science partnerships with The University of Queensland and James Cook University to enhance science support for the Queensland food and agribusiness sector and to leverage world-leading science for the benefit of Queensland's primary industries.

It is anticipated that RDCs will be in a position to make an important contribution to both the National RD&E Framework and to the university partnerships. This contribution is both in terms of funding and in providing input into the strategic direction setting for R&D and assisting in creating national projects involving collaborating research agencies.

The industry contributions received by RDCs are generally sector specific. This means that the RD&E investment is primarily targeted within the industries that contribute funding to the RDCs. This pattern could equate to new R&D opportunities not being fully captured. To ensure that investment is strategic, there is a need to adopt a mechanism that assists in focussing RD&E on cross-sectoral opportunities that exhibit potential, such as for example agricultural development in northern Australia.

Current RDC Model

In general, there is a strong alignment of RD&E priorities between RDCs and the Queensland Government. The Government implements internal project approval processes which ensure that project outcomes, irrespective of internal or external funding, are aligned to Government and industry priorities.

The Queensland Government supports the current RDC model with its industry contribution and input into strategic priorities. In general, this partnership approach has worked well. The relationship between the RDCs and the Queensland Government has been, and continues to be positive.

However, there is scope to examine how the model could work more effectively to create greater efficiencies in the system. Better coordination and strategic priority setting needs are key considerations.

Whilst it would be ideal to increase the level of funding available to the RDCs given some recent analyses suggesting a decline in productivity growth (ABARE), at the very least current levels of funding should be maintained. Given these indications, it is not an appropriate time for the Commonwealth Government to be reducing current funding levels. However, to make the R&D funding system more effective, a more flexible mix of short and long term funding of projects may be appropriate.

It is important that the RDCs maintain a role as a primary vehicle in providing funding support for innovation focusing on productivity-based R&D which underpins economic development in the rural sector. It will also be necessary to maintain clarity in the linkages to the implementation of the National RD&E Framework (refer Other Key Considerations below).

Strengths of the Current RDC System

The RDC system has focused RD&E on producing outcomes that deliver economic, social and environmental benefits in Australia. There is significant diversity between individual RDCs in that some are industry owned companies and others are statutory bodies. For instance, one of the core functions of HAL and MLA is marketing and promotion within the sectors that they represent. However, despite this diversity, the RDCs have worked well in delivering R&D outcomes that have contributed to productivity in the rural sector. It is also important that the boards of RDCs have a range of skills that meet their core business needs.

Additionally, the current model of industry specific RDCs has led generally to strong linkages with industry stakeholders to ensure that RD&E is relevant to end users. A strength of the current system is flexibility that allows RDCs to deliver what is required by the industries contributing to them. Industry participants generally have had significant input through consultative mechanisms in determining R&D priorities to support the growth and development of the sectors they represent.

However, consideration needs to be given to how to best support R&D in those sectors not covered by compulsory levies and how to support cross-sectoral R&D.

Challenges of the Current RDC System

Short Term Funding

Generally most funding for RDC projects is limited to three years. The nature of short term funding for projects has led to the appointment of temporary staff, which then presents difficulties in maintaining skills and capability. Overall this impacts on the continuity of longer term RD&E capacity and facilities. Importantly, this environment of short term employment has led to less attractive career pathways for scientists engaged in agriculture and related disciplines.

As RDC revenue is based on industry levies which are generally production based, climate variability impacts such as drought and water shortages lead to fluctuations in production which can result in significant year to year variation in funds available for project funding. This also presents difficulties in the maintenance of skills, expertise and capabilities, although the RDCs have often managed funds in an endeavour to ensure continuity of investment in times of revenue shortfalls through maintenance of reserves.

Competition for Funding

Competition for project funding from RDCs needs to be fair and transparent and Commonwealth matching contributions need to be applied equitably. This applies particularly where systems based on voluntary co-funding contributions are in place (eg. HAL). In these circumstances, the treatment of co-funding contributions from all sources needs to be managed on an equitable basis, regardless of whether such funding is sourced within Australia or offshore.

Non-Standardised Administrative Systems

A number of different administrative platforms such as reporting requirements, evaluation, contractual arrangements and software currently exist and are totally disparate among RDCs. A more coordinated and harmonised approach to these processes would allow us more efficient and effective administration of projects, but would undoubtedly incur costs within the RDCs. Perhaps a staged approach would be advisable.

How the RDC Model could be Improved

Strategic Focus

The RDC model could be strengthened by ensuring that the focus of RDCs includes a strategic perspective across sectors that improves linkages and better identifies future cross-sectoral opportunities for industry growth and investment in RD&E. This could also be accompanied by a greater level of transparency in the reporting of

regionally based investments including the outcomes delivered by RD&E projects. The use of a lead agency RDC for multi-RDC projects could streamline and reduce the burden of administrative processes.

Operational Issues

Early advice of successful project applications can assist in reducing delays in achieving project milestones and project completion. A change of project timing to run from September to August instead of the more usual financial year basis would allow lead time for project commencement after project approval and for contract completion.

Whilst it is recognised that changes to streamline RDC administrative processes may require short term start up costs, in the longer term benefits should be realised. This would help to ensure that less resources and funding are consumed by administrative costs and allow a greater spend on R&D projects to maximise the return on investment.

In terms of other administrative issues, it would be beneficial if measures were taken to ensure the standardisation of contracts, reporting formats, and a consistency with regard to the software used by RDCs.

Reduction in overlaps and duplication of RDC administrative processes needs to be addressed where possible. Difficulties and delays have been experienced in negotiating multi-RDC funding of cross-sectoral proposals and projects. The delays have occurred primarily in relation to project approval including signing of contracts and provision of progress reports.

Other Key Considerations

Public Versus Private Benefit

The current model of RD&E investment involving RDCs delivers a mix of public and private benefits which reflect the reality for the rural sector where knowledge spillovers and externalities are important factors in determining the beneficiaries of that investment. While it is important that investment by government should preferentially target R&D which incorporates strong public benefits, the generally complex mix of beneficiaries of rural R&D needs to be acknowledged.

Despite evaluations suggesting strong positive returns from R&D investments (including harder to measure environmental and social impacts) there is a propensity for under-investment in rural R&D. This is due to capacity constraints and high risk profiles in relation to R&D in the sector. Under these circumstances, the Queensland Government advocates that public investment in rural R&D should continue. Furthermore, given the emerging consensus that productivity growth in the sector is

declining significantly, it is desirable that opportunities to increase rural R&D investment, both public and private, are seriously considered.

National RD&E Framework

The National RD&E Framework has had a positive influence in building and improving collaborations between government jurisdictions and other R&D agencies across Australia. Although the detailed implementation of the National RD&E Framework is still evolving, the RDCs have the potential to play a vital role in delivering the outcomes sought by the Framework. The RDCs will also influence direction setting under the Framework.

However, in order for the RDCs to effectively contribute to the implementation of the Framework, there is a need for further and significantly enhanced coordination and strategic direction setting to achieve better returns on investment.

Therefore this inquiry needs to ensure that due consideration is given to how the RD&E Framework aligns to any revisions to the current RDC model and vice versa.

Cross-sectoral Issues

The key emerging issues confronting agriculture are cross-sectoral in nature. Examples of these issues include drought, water efficiency, energy use and climate change. The present RDC model does not facilitate effective prioritisation of R&D investment in cross-sectoral issues. The abolition of the Land and Water RDC has also reduced the focus on key cross-sectoral matters.

The National RD&E Framework could provide a vehicle through which cross-sectoral issues in the rural sector R&D could be better addressed. Additionally, there is scope for the existing R&D Council to take a stronger leadership role in determining priorities at the national level and to influence investment so that these issues are more effectively addressed in the future.

Due to the importance of cross-sectoral issues in agriculture, it is important that there is adequate funding available for RD&E. There may be a case for cross-sectoral programs to be supported by special purpose funding rounds along the lines of projects that have been specifically funded for climate change. This would elevate the significance of these issues and ensure that appropriate funding was made available, but risks further exacerbating the problem of temporary funding and temporary staff.

Supply Chain Issues

The Queensland Government recognises that the impact of improved productivity and the social and environmental outcomes of R&D extends well beyond the farm

gate. Where concomitant public benefits are anticipated from R&D along the supply chain, a mechanism for voluntary contributions should be facilitated so that issues, particularly those beyond production in the supply chain can be addressed. Whilst it is understood that currently some RDCs allow for voluntary contributions, it is not a consistent practice across the full range of RDCs. This would enable a broader perspective for enterprise engagement in funding R&D in sectors where this currently does not occur.

To encourage supply chain operators to contribute voluntarily to RD&E projects, reviewing taxation concessions would also increase the incentive to undertake privately funded RD&E.

Furthermore, where voluntary contributions are made by parties along the supply chain these should attract matching public funds where there are spillovers and the benefits of the collaborative R&D accrue to more than just private firms involved in funding the R&D. This approach would have the effect of growing the level of RD&E investment.

Science Quality

The quality of research is an area that also needs to be addressed. The pressure on RDCs to invest at the margins has led to situations where the research quality flowing from such investment has on occasions been sub-optimal, particularly in relation to cross-sectoral issues.

A lack of emphasis on publishing the results of R&D has to a certain degree created an environment where research standards have not had a high focus. The lack of published results from R&D has also prevented R&D programs from benefiting from peer review.

Scientific rigour and a publication record can be critical in areas such as biosecurity or in gaining market access through World Trade Organisation negotiations.

Intellectual Property

Significant resources are committed to capturing the value of intellectual property (IP) generated by outputs from projects funded through RDCs. There continues to be some debate as to whether the outputs of projects which have been publicly funded should lodge in the public domain rather than being subject to IP protection with the aim of providing a revenue stream.

However, it is accepted that protection of IP provides two significant advantages.

Firstly, it enables collaboration with commercial partners in the development and adoption phase of a project. Without protection of IP, commercial partners would not

be prepared to make the considerable investment required to deliver improved products to market.

Secondly, the commercialisation process provides an income stream for future R&D. Benefits from past investment in R&D accrue to present users of improved technologies and practices and it would appear inequitable not to utilise opportunities to generate similar benefits for future users.

Tropical Investment

At present, agricultural and related R&D investment in northern Australia is considered to be at sub-optimal levels. Funding levels available for collaborative R&D across Queensland, the Northern Territory and Western Australia are not at levels that will lead to the progress necessary to meet challenges such as climate change. Additional R&D addressing development opportunities in northern Australia would support expansion of food production and could potentially assist in balancing Australia's response to the challenges associated with climate change in both a local and global context.

There have been significant opportunities identified in northern Queensland, particularly in the area of water resource availability, compared to more established regions of southern Australia. The Northern Land and Water Taskforce in its report to the Commonwealth Government in December 2009 identified mosaic agriculture as an appropriate model for new agricultural development in northern Australia that warrants further consideration.

The Commonwealth Government and the RDCs need to consider where and how they invest to capitalise on tropical opportunities in northern Australia. A funding boost targeting tropical R&D would provide a means to accelerate tropical development. Consideration could be given to establishing special interest funding rounds along the lines of that undertaken in relation to climate change.

In addition, a flexible approach to where and how the RDCs are encouraged to invest could also be beneficial in capitalising on the potential for growth in northern Australia.

More Effective Priority Setting and Performance Management

With respect to the statutory RDCs, the Commonwealth Government has been able to influence to some extent strategic direction of R&D investment through their charters via a requirement to deliver on a set of priorities provided by the Government.

As mentioned earlier, difficulties have emerged in prioritisation of cross-sectoral issues (such as with R&D focussing on whole farm systems, water use efficiency, plant genetic resources etc) which are of direct interest to a number of RDCs.

The nature of the co-funding model associated with RDCs (funding at the margins) and the specific industry focus of some RDCs creates the potential for RDCs to attract and capture significant amounts of R&D funding contributed by R&D providers. This may result in a reduction in the available pool of investment funds residing with R&D providers that are able to be accessed by other sectors or industries for high priority R&D. As a result, R&D funding could be skewed in ways that may result in sub-optimal investment, taking into account the priorities for R&D for the agricultural sector as a whole. Therefore in order to ensure that priority setting processes and the resulting priorities are sound, decision-making committees need to encompass representation from a broad range of interests.

Allied to this, the level of commissioned R&D by RDCs has increased as the availability of R&D funds has tightened. This has the effect of reducing the pool of RDC funds which are subjected to a competitive bidding process by R&D providers and is likely to have as its outcome greater specialisation by R&D providers and a significant reduction in diversity and choice of available R&D providers. Measures to test and maintain research quality and valyue for money are essential in order to provide an R&D system that is effective and sustainable in delivering R&D outputs.

It is also important to ensure that the boards of RDCs access professional and technical RD&E expertise to assist in the professional evaluation of project applications.

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