The House of Representatives Standing Committee on Science and Innovation

30 August 2002

Inquiry into Business Commitment to Research and Development in Australia

Thank you for the opportunity to submit comments to your Inquiry. I do so on behalf of the Rural Research and Development Corporations (RRDCs) in accordance with your Committee's terms of reference, while making personal observations on general issues as I believe they relate to RRDCs. As there is a meeting of Chairpersons of the RDCs next week it is possible that supplementary submissions to your inquiry could result in the near future. I would be indebted to you if my submission and any such supplements were able to be considered together.

Your terms of reference request that questions be considered in light of R&D "drivers" in small and medium sized business ("SMEs"), the needs of fast growing companies and the considerations by which major international corporations site R&D investment.

General comments:

The Rural Research and Development Corporation model

- A summary of the features of the RDC arrangement is included as an attachment to this submission. Each RDC has the following features: joint government and industry investment in research priorities identified by industry, along with government priorities; direction and management at arm's length from government by independent boards selected on merit; selection of R&D projects and research providers through contestable processes, getting the best science wherever it resides, and delivering R&D results through industry networks to speed up adoption. Informal comment by US expert observers recently indicates that they consider the RDC model as leading world practice for rural R&D (sources available on request).

Employment and SMEs:

- By their continual conception-formation-failure-success nature SMEs in general create employment, at a rate expected to reflect the economic and entrepreneurial climate applying at the time.
- Very large corporations tend to pursue productivity improvements to reduce costs and remain competitive. In so doing they can tend to reduce overall employment unless they are able to expand through high-growth new-era businesses. Such a shift is difficult when many new-era businesses are smaller scale than many large corporations wish to undertake.

Research and SMEs:

- Small companies are less likely to be able to carry out R&D on any scale unless they aggregate with others.

Growth:

- Fast-growing SMEs often lack the full suite of skills (management, marketing and financial) and might not have the experience to realise which of these they lack. They also need access to capital to finance growth.

Siting of R&D

- If a very large corporation wishes, it can relocate its operations and R&D internationally, and would be expected to do so if an overall advantage seemed likely to persist longer term. In particular a very large corporation would consider the social and political stability, and the education level and cost levels in a country which was a candidate for its R&D. It is believed that Australia should score well on most of these factors, in particular the cost of employing skilled scientists.

Your questions:

Question 1:
What would be the economic benefit for Australia from a greater private sector investment in R&D?

Comment:

R&D investment portfolios of RDCs have been able to realise a benefit:cost ratio of 7:1 from expenditures on R&D (refer "Innovating Rural Australia – R&D Corporation Outcomes" AFFA 2001). Because there are thousands of SMEs in rural Australia, this R&D outcome would not have been possible without some aggregation of research funds, such as in the RDC model. In turn the rural SMEs' preparedness to contribute and aggregate funds for R&D through the RDCs was made possible by the incentive of the Commonwealth Government joining in with matching funding up to a limit of 0.5% of gross value of production. This means of public funding also gave the Commonwealth the ability to ensure there would be adequate "public good" R&D for longer term sustainability issues e.g. for the environment and for maintenance of rural societies. Several RDCs make industry contributions in excess of the level to which the Commonwealth is able to match under its formula. For an "extra-matching" industry funding arrangement it is a pre-requisite (and a proof) that R&D is considered by rural industry as an investment rather than a cost.

If an expansion in RDC funding (by Commonwealth and/or industry) were to take place it is likely that the 7:1 order of benefit:cost ratio would persist. It is the experience of RDCs that there are many more worthy projects proposed than can be funded.

While the model is confined to rural industries, it is possible the model has applicability to other industries that contain a high proportion of SMEs.

Question 2
What are the impediments to business investment in R&D?

Comment:

Any belief that R&D is a cost rather than an investment is a major if not fatal impediment to industry funding of R&D, and works against early adoption of promising R&D outputs.

An inability to finance meaningful R&D alone through the small size of SMEs is an impediment, requiring a method for sharing the cost through syndication or other mechanisms, the RDC model being one.

Appropriate national education is needed. If the population in general has little appreciation or knowledge of the value of R&D, of science, of skilled management and of entrepreneurship then the high level of talent required for success will be diverted into non-entrepreneurial, non-scientific activity.

Financial incentives to reward success through development and adoption of early stage R&D e.g. via taxation are obviously applicable although the RDCs have no position on this issue. Rewards through commerce or professions most often do not require R&D, so for an R&D focus, R&D success should be rewarded highly. Exemplars are needed.

Question 3
What steps need to be taken "to better demonstrate" to business the benefits of higher private sector investment in R&D?

Comment

The comment on financial incentives above is again applicable, although they are of little use without entrepreneurship.

The Commonwealth Government has changed science policy for the better in recent years. Changes include the establishment and expansion in the Cooperative Research Centre Program, the introduction of taxation incentives, and more innovative financial arrangements through the Government's Backing Australia's Ability Statement.

As part of a bigger picture, RDCs have played a part in the evolution of a culture that has given rural industries a much greater understanding and appreciation of the potential benefits from investment in R&D. We believe the RDC framework and the culture of innovation it produces warrants attention from your Committee.

RDCs have an emphasis on ensuring that their R&D pursues industry and complementary government priorities while not being dictated to by either, and not being driven by science alone. It is by RDCs being whole-of-industry supported and industry priority driven that ensures industry's full participation and support of R&D by the RRDCs.

Global success factors

It is relevant to draw attention to the recent visit to Australia by a prominent academic in the person of Professor Michael Porter of Harvard University. He is believed to be the world's foremost authority on international competitiveness. During a short recent visit to Australia, Porter made comments in media on the requirements for global success.

His central thesis is that Australia should develop globally competitive industry clusters by supporting areas of unique potential.

The cluster idea involves business, the government and universities examining the key drivers of Australian competitiveness. Things like our specialised skills, the technology we employ, and our ability to translate and commercialise technology rapidly.

Porter says a key requirement of a cluster is the quality and frequency of business involvement in knowledge management at a regional rather than enterprise level.

He says it's only through the intensive participation of business that particular skills are upgraded and technological capabilities enhanced. This cycle of growth enables clusters to move from one stage of development to the next.

When discussing the development of clusters, Porter particularly uses the example of agricultural and natural resource industries. He says it is not sufficient for these industries to continue in the production or extraction of bulk commodities. They must always see where they can add value.

Porter says R&D needs to be part of a broader focus to include innovation, value adding, marketing and the creation of linkages to institutions that get the cluster going and make it successful.

Key institutions include a strong education system to develop local talent and attract outside talent; Universities and specialised research centres to drive innovation; and, mechanisms for commercialisation if innovation is to translate into economic success.

He adds that it's important for processes to be driven by industry and supported by government. In Porter's experience government-led initiatives are very rarely successful.

In his view the Commonwealth's role is to support industry through:

- Investment in the foundations of science and technology by funding universities, other research centres and policies to encourage investment in university science and technology infrastructure;
- Support for specialised training programs in science and engineering;
- An improved innovation policy with regard to intellectual property protection, strengthened competition policy, tax incentives that encourage business investment in R&D and industry-university collaboration; and
- Allocation of resources to reinforce cluster development through competitive grants, and to encourage local businesses, universities and research agencies to collaborate around clusters;

RDCs: *Investment by business for global success:*

The RDC framework promotes an increased industry contribution to R&D. Industry funding for RDCs jumped from $26.5 million in 1984-85 to $179.436 million at present. This represents an increase of around 580 per cent.

While the government matches industry investment in RDCs up to a prescribed limit, many industries choose to spend beyond the level where government matching cuts out. These industries regard R&D as an investment in their long-term health.

The participation of RDC's in investments with research partners provides significant financial leverage for the R&D process. There is also a significant in-kind contribution from producers and scientists researching innovations, who spend time planning, evaluating and trialling R&D outputs. They are part of a unique co-management model.

The RDC arrangements incorporate many of the policies advocated by Michael Porter, as they:

- Were built on existing "clusters" of a sort around Australia's areas of unique rural potential, while investigation of downstream investment via RDC expenditure has probably been muted unless by industry alone with commensurate individual as opposed to industry reward (exceptions exist, one example only being the Grape and Wine industry and development of tamper proof caps.);
- Are industry-driven and government-supported under partnership arrangements;
- Combine business, government and universities in addressing the key drivers for competitiveness and they pursue industry knowledge management regionally and nationally;
- Have made very significant contributions to industry competitiveness and the development of many successful industries including wine, grains, cotton and rice;
- Have established key linkages with other industry sectors and institutions, including high levels of investment in the development of human and other capabilities and in the commercialisation of research.

The features of the Rural Research and Development Framework arrangements and expenditures are attached below.

I would be happy to arrange for representatives from RDCs to attend hearings of your Inquiry to discuss the above proposals.

Yours sincerely

Clive Hildebrand
Chair, Rural R&D Chairs Committee

The Rural R&D Corporation Framework

The Australian RDC framework involves annual expenditures of around $380 million on rural R&D and is one of the most significant and successful government policies for rural Australia. It is directed at ensuring that Australia's rural industries have access to the leading edge technologies which are critical to their international competitiveness.

The framework comprises thirteen organisations. These include nine statutory corporations, namely; cotton, dairy, fisheries, forest and wood product, grains, grape and wine, land and water, rural industries, sugar. There also are similar corporate arrangements for horticulture, pork, meat and livestock, and wool.

Each of these corporations has a Board of nine Directors, including ex officio, a 'Managing' or 'Executive' Director. The corporations operate under common arrangements prescribed in legislation. These arrangements include standard provisions for the selection and appointment of Directors, strategic management of the corporation in consultation with their industry sector and for full accountability to stakeholders over performance.

The day to day focus of the RDCs is on the management of a portfolio of strategic research activities on behalf of participating industries, centred on the allocation and administration of funds to research providers.

The framework was primarily developed as a way of overcoming the inherent tendency in rural industries for under-investment in R&D. It is based on measures that are designed to ensure adequate funds are available to facilitate an appropriate access by rural Industries to leading technologies.

The problem of probable under-investment in rural R&D arises from the nature of rural product markets and the predominance of a very large number of small producers each with little market power. Consequently, individual producers are unlikely to have the incentive to invest in R&D. Producers who do invest are unlikely to be able to appropriate fully the benefits from so doing, while those who do not invest will, nonetheless, probably be able to gain access to the ensuing

technologies. This situation, unless addressed, has the potential to result in a significant loss of benefit to individual producers, rural and associated industries and the nation. It has long been accepted that there is a strong case for government intervention to overcome this market failure and to ensure that the appropriate level of investment is conducted in rural R&D.

The RDC framework has proved to be a successful way of addressing this problem. It does this in a number of ways.

First, under the RDC administrative and funding arrangements, rural producers become closely involved in strategic decision making on R&D for their industry. This leads to a greater understanding of the value of research and producers are encouraged to invest in R&D at a level which can drive the competitiveness of their industries.

Second, the RDC framework provides a way of engaging industry and governments in a partnership to ensure that both public and private investment needs for rural research are met in an integrated manner.

Third, the framework provides a set of arrangements which directly act to overcome market imperfections. The establishment of RDCs as corporate entities, and the mandating in legislation of certain management and accountability processes, lead them to operate in line with commercial market behaviour.

Additionally, the Minister provides advice to the RDCs of a number of broad priority areas of R&D so that RDC strategies can be framed against a background of Government policies and priority areas of public good research.

The levy mechanism is fundamental to the successful operation of the rural RDC model. The system of levies enables rural producers to combine in addressing their collective interest to ensure that there is sufficient investment in R&D to enable them to be internationally competitive. Given that they have an advantage in pursuing their common interests, levies provide a means for the efficient and effective collection of contributions on a fair and equitable basis from industry members.

RDC funds are in most cases drawn from a combination of industry levies and matching Commonwealth Government contributions. Under the matching arrangements applicable to most RDCs, the Commonwealth provides dollar for dollar matching of corporation expenditures on R&D from levy derived funds, up to the level of 0.5 per cent of the industry gross value of production.

Success of the Framework

The level of expenditures under the present arrangements is a strong indicator of the success of the framework. In addition to a significant increase in overall expenditures and the value of the strategic processes involved, it has been instrumental in eliciting large increases from industry in contributions to rural R&D.

Between 1984/85, (the last period of the previous arrangements) and 2000/01, the respective contributions from industry and Commonwealth have increased from $26.5m to $179.436m, and $39.9m to $161.821m. Over the same time overall program expenditures have increased from $63m to $377.75m.

The table below sets out, for each of the organisations operating under the framework, the contributions received from industry and the Commonwealth, and their expenditures, for 2000/01.

(In interpreting these figures it should be noted that the figures do not necessarily add up horizontally across the table, principally because of the influence of reserves and other revenue sources e.g. voluntary contributions and interest earned. It should also be recognised that specific program funding is included in Commonwealth funding figures for some corporations).

- Rural R&D Income and Expenditures 1999-2000[1] (Audited Figures From Annual Reports)

RDC INCOME AND EXPENDITURE 2000-01
(AUDITED FIGURES FROM THE ANNUAL REPORT)

R&D CORPORATION/COUNCIL	INDUSTRY CONTRIBUTION ($' 000)	COMMONWEALTH CONTRIBUTION ($' 000)	EXPENDITURE ($' 000)
COTTON	6930	6774	3874
DAIRY	13965	12678	1161
FISHERIES	3781	14286	0346
FOREST AND WOOD PRODUCTS	3863	1608	074
GRAINS	48875	34465	15744
GRAPE AND WINE	6200	5131	807
HRDC	13282	8063	7487
HAL*	9185	12269	1634
LAND AND WATER RESOURCES		11314	2162
MEAT*	20766	20766	1532
PIG	3514	4069	314
SUGAR	4508	4522	3759
TOBACCO	366	255	152
AWRAP*	14111	4100	903
AWI*	25889	5796	0270
RURAL INDUSTRIES	3958	15302	4282
DRIED FRUITS	243	423	249
TOTAL	179436	161821	77750

* Estimates only - potential inaccuracy associated with marketing/promotion functions