Submission to Productivity Commission Inquiry into Rural Research and Development Corporations

SUMMARY

The Dairy Futures CRC provides a range of case studies that address issues raised by the Productivity Commission. Collectively, the case studies demonstrate the critical role of public investment in a partnership with industry-good and commercial partners, the efficiency of investment and an improved capacity to evaluate the impact of the investment and leave a suitable public legacy.

The industry-specific nature of both the Rural Research and Development Corporation and the Cooperative Research Centre (CRC) provides a range of efficiencies for investment and derivation of impacts that could not be substituted in a straight forward manner if the close relationship did not exist. The level of connectedness with technology transfer networks is a critical success factor to deliver broad industry outcomes.

1. Introduction

The Dairy Futures CRC is a new research centre that commenced operations on the 1st January 2010. As such, it represents a new investment model that is based on revised funding guidelines provided for the 11th round of funding. The function and structure of the Dairy Futures CRC reflects clear industry planning about the respective roles of the Rural Research and Development Corporation (Dairy Australia) and the unique investment partnership that is characterised by a CRC. These roles are differentiated and designed to maximise the complementary aspects and minimise duplication of investment and effort.

The roles and interface between the Dairy Futures CRC and Dairy Australia are specific to the dairy industry but are illustrative of the value created for the rural sector through the activities of two major public-private partnerships.

2. Investment partnership model

2.1 Differentiated role of Dairy Australia and Dairy Futures CRC

- Dairy Australia's role is to provide a **broad range** of industry services for the dairy industry. Dairy Australia provides a significant levy-based contribution to the Dairy Futures CRC and has a critical role to extend the industry-specific networks and capacity for impact of the Dairy Futures CRC.
- Dairy Futures CRC's role is to provide the scale required to address a **specific opportunity** for the dairy industry; to deliver new bioscience technologies. This requires a large-scale industry-government partnership to overcome investment risk ($128 million investment over 7 years).

2.2 Investment risk for the Dairy Futures CRC

- Investment in bioscience has significant technical and adoption risks. Economic modelling of CRC activities suggests a 20 to 30% chance of delivering the potential gains from current bioscience projects which would provide a benefit cost ratio of 2.1:1 and a 15-year impact of $320 million (NPV).
- Investment is required over a long time horizon. New product development in pasture breeding and cattle breeding is of 12 years and 6 years duration, respectively. Timeframes for bioscience-based technology development are typically 8-10 years. This combination of long commercial processes and long technology phases means that public-private investment partnerships are required to overcome the investment barrier.

2.3 Mutual-benefits investment model

- The Dairy Futures CRC is an example of where mutual benefits can be delivered from a mixed investment model.
- Commercial benefits include preferential arrangements and equity positions in new technology platforms. Public and industry-good expectations are that the commercial partner has the capacity to rapidly take new products and services to market and to generate broad market penetration.
- Industry-good benefits include the adoption of technology that would not be possible without a shared investment, especially where individual end-users reap significant benefits because there are limitations in the capacity to generate commercial returns from new technology. An example is the use of DNA-based technology in cattle breeding, where there is a demonstrated inability in most developed

markets (eg USA, Canada, Europe) to attract significant price premiums from the use of the technology. However, the technology can increase the rate of on-farm genetic improvement by 50 to 100%, which could result in total factor productivity growth in the dairy industry of 0.5 to 1.0% on an annual basis.

- Public benefits include the adoption of technology that would not be possible without a shared investment so as to generate national and state-based economic benefits and to create significant spillover benefits. Spillover benefits are deliberately targeted through the diffusion of technology to similar industries (such as the beef and sheep industries) and the expansion of science targets to include community benefits (such as a reduced environmental footprint, improved nutritive qualities of milk and reduced exposure to hayfever allergens).

2.4 Capacity to substitute private investment for public and/or industry-good funding has been tested.

- A genuine test of the capacity of private investment occurred in 2008, when the CRC for Innovative Dairy Products concluded its 7-year grant and had provided a unique value proposition with two landmark patents. A major local commercial provider had been an active participant in the CRC and understood the potential of the technology. Two large multinational companies also investigated the investment opportunity to pursue commercialisation of the DNA-based technology in cattle breeding. In each case there was insufficient commercial interest and an inability to substitute for the existing public-private investment model. Activities where scheduled to wind down and there was a last-minute reprieve when a short-term public/industry-good/commercial model was enacted. This 18-month extension of activities was a pivotal investment period when the first commercial products were produced, consistent with the mutual benefit arrangements described in Section 2.3.

Related questions posed by the Productivity Commission issues paper:

Why should government provide funding support for rural R&D? Does the base case rest mainly on spillover benefits or are there other important rationales?

Government funding of rural R&D is a critical contribution to mutual benefit investment models. The Dairy Futures CRC has numerous examples of high-impact technology where the benefits are shared between the dairy farmer as the end user, the commercial services company and the public. Public benefits include capacity to overcome investment risk and deliver industrial productivity gains as well as direction of investment to generate spillover benefits.

What factors might mute the strength and/or timing of any increase in private funding in response to a withdrawal of public funding for industry-focused R&D? (particularly long-lag implications)

Commercial factors include significant technical and adoption risks in a market environment that is challenging to derive adequate commercial returns, and long-runs and long-lags in delivering commercial returns from current investments. Risk aversion is also common due to the long timeframes for new product development cycles.

Industry-based factors include long-lags in delivering industry benefits from new technology and risk aversion in support of large-scale and risky ventures.

How important is it that government contributes to the cost of maintaining core rural research skills and infrastructure?

Government contribution is critical in the provision of core rural research skills and infrastructure. There is a significant contrast between an expansionary state government initiative in agricultural biosciences with a well-maintained skill base and infrastructure and the systemic difficulties faced by agricultural & veterinary faculties at major universities. The work program of the Dairy Futures CRC could not be contemplated without access to state government based infrastructure. There are substantial future challenges at university level with low levels of capital investment, low numbers of undergraduates in agricultural science and the loss of national capability in key disciplines.

3. Efficiency of investment

3.1 Critical-mass of investment for large-scale and technology-based change

- The Dairy Futures CRC is the largest example of an integrated innovation project for the dairy industry. Development of new bioscience-based technologies require a critical mass of expertise (provided by five research institutions), large capital expenditure on equipment (provided by a state government department), close links to industry to collect samples from elite and commercial lines of pasture and cattle, and expertise in technology transfer, logistics and marketing (provided by commercial partners).
- Dairy Australia has numerous roles which increase the efficiency of investment in the CRC. This includes advanced industry-specific networks that provide capacity for development, extension and education activities. There is also expertise provided at program and project management level that contributes to strategic and tactical decision making. Communications infrastructure also supports the

effective distribution of information direct to end users and the media. Most of these roles are unique, where their function could not be directly substituted by services provided by other participants in the CRC in terms of the industry reach, industry-specific expertise and utilisation of existing networks.

3.2 Administrative efficiency

- Many administrative functions of the Dairy Futures CRC are provided on a marginal-cost or in-kind basis from Dairy Australia and a state government department. This includes support for human resources, accounting, office services, communications, logistics, contract management, visitor services, meeting facilities, and corporate purchasing. The net result is significant savings in operational overhead costs and better administrative outcomes from access to expert providers of services.

3.3 Improved systems for evaluation of investment

- A comprehensive system for pre-and post- evaluation of investment in the Dairy Futures CRC has been devised by the Department of Innovation, Industry, Science and Research (the impact template and related CRC reviews). The pre-evaluation of investment using this template was straight forward due to the ground work provided by Dairy Australia from its regular economic evaluation of major projects. There was a consistency of approaches that provided a contrast between the investment case and the counterfactual case that addressed a range of risks and sensitivities.

Related questions posed by the Productivity Commission issues paper:

Does the significant number of entities, research programs and funding pools cause problems?

No. There are clear and well-differentiated roles for each entity and funding pool. Synergies can be designed in an efficient manner. Importantly, there is no evidence of any gains to be made by rationalisation or substitution of entities or research programs.

Is overlap with the work of the CRCs largely complementary, or are changes warranted to either or both programs to reduce that overlap?

The overlap is complementary for Dairy Australia and Dairy Futures CRC.

How do the numbers compare to those emerging from evaluations by individual RDCs (both before and after the event) and for comparable projects by other research entities such as the CRCs?

The numbers are consistent for the before-the-event evaluation based on third-party advice that is common to both institutions. It is premature to consider after-the-event in this case.

Has there been sufficient rigor and consistency in the way in which 'counterfactuals' for individual projects have been constructed? Has there been sufficient sensitivity analysis in regard to all of the key influences on reported project returns?

A significant investment in economic analysis has been undertaken by both Dairy Australia and Dairy Futures CRC that includes the use of counterfactuals and risk & sensitivity analyses.

4. Capacity for collaboration

4.1 Cross industry collaboration at CRC level

- The Dairy Futures CRC actively collaborates with peer CRCs, particularly in beef and sheep industries. There are shared scientists, shared events (such as a major joint-industry conference), and shared purchasing of key components to reduce operating costs (savings in 2010/11 are expected to be $500,000).
- There are additional collaboration activities to deliver schools and community education and awareness campaigns of the value of science and agriculture and to provide value-add services for postgraduate training.

4.2 Cross industry collaboration at Rural Research and Development Corporation (RDC) level

- Some of the CRC activities have joint application in the dairy and red meat industries. Joint investment by the respective RDCs, the involvement of common commercial partners and a shared prioritisation of research targets provides for an enduring cross-industry partnership that is now in its seventh year.
- The RDCs also have a strong peer network that shares experiences in each industry. This has provided a range of examples of modification of investment strategy and additional market intelligence. The peer network also provides efficiencies in the consideration of the freedom-to-operate position for the introduction of novel technologies.

Questions posed by the PC issues paper:

Are there significant opportunities for additional collaborative research effort across the RDCs which would have significant payoff?

Both RDCs that could derive industry benefits from this technology are working together.

Is there scope for RDCs to do more collaborative work with overseas entities?

Yes. The Dairy Futures CRC will likely bring additional international partners and collaborative activity that could seed additional collaborative work at an RDC level with overseas entities. These entities will be both commercial partners and R&D partners. The scale of activity of the Dairy Futures CRC and its capacity for innovation leadership on an international scale will assist in driving collaborative efforts.