Evaluation

of the

Enterprising Partnerships Fund

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Ministry of Business, Innovation & Employment

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1 Executive Summary

This evaluation provides evidence-based conclusions on the efficiency and effectiveness of the Enterprising Partnerships Fund and policy-relevant recommendations regarding the design and delivery of future funding and support arrangements.

The Enterprising Partnerships Fund allocated $7.59m over three initiatives: Innovation Waikato Limited (a cluster of agri-technology exporters in Hamilton), the Applied Design Research Centre (a polytechnic-based innovative design centre in Dunedin) and the Cawthron Institute (an aquaculture research and development centre in Nelson). The fund is now closed.

Two of the three initiatives seem to have achieved additional value that would not have occurred in the absence of funding. One of the initiatives is following a business model that appears to have the potential to create new export dynamics.

Implications for other funding arrangements

Knowing that the EPF was closing, the evaluation considered lessons for other funding arrangements, such as those managed by MBIE's Science and Innovation Group and NZTE.

The evaluation found that funding for well defined 'industry-good' infrastructure and for a cluster of capability exporters had been effective under the EPF. Equally there were high transaction costs. The experience suggests that *efficient* funding requires (a) initiatives to be of a sufficient scale and (b) early engagement with initiatives.

Funding should be just the beginning – excellent execution is crucial. Funding is most effective if it is flexible and of a long enough duration to allow initiatives to get firmly established and operating.

Combining the reporting requirements for different funds is a potential way of reducing compliance costs for businesses. This would require government agencies responsible for different funding arrangements to work together closely.

Overall, in two out of the three cases funded there have been demonstrable results from the investment. These are local initiatives with benefits that are significant for New Zealand.

The third case highlighted the importance of close engagement with business, the need for investment in human as well as physical infrastructure and the need for projects to have adequate time to develop the necessary networks and activities.

Outcomes from EPF's $7.59m of funding

Innovation Waikato Limited is using its subsidiary Dairy SolutioNZ to follow a new business model with potentially large benefits (most of which are still to be realised) to those involved, from both export and investment opportunities. While partner companies have not yet received much return from the initiative, it appears that some significant international deals are about to be finalised and there is a strong pipeline of prospects.

Interviews with partner companies indicate that these deals are additional to what the companies would have been able to achieve without assistance from Innovation Waikato Limited. Evidence from these companies also implies that the deals have the potential to generate reputational spillover benefits for other New Zealand businesses.

Interviews with partner firms and Innovation Waikato Limited's management suggest that EPF funding allowed a significant acceleration in the rate at which the initiative closed in on deals and that without this acceleration the initiative may have fallen apart.

The Applied Design Research Centre has delivered a small net benefit for the companies that it has engaged with, but it is not clear that the initiative required government funding. The Centre was disestablished post-funding. The Otago Institute of Design's Innovation Workspace is now playing a similar role to that of the Centre, but without requiring new government money.

Businesses that used the Centre were satisfied with what it was able to do for them, but it seems that these engagements have led to few identifiable sales and export opportunities. The Centre believes that their role was to develop design capabilities rather than commercial opportunities, working on a design improvement frontier beyond the current issues faced by existing businesses.

There appears to have been more scope for engagement with businesses in the region: a relatively high proportion of the Centre's engagement was with government-funded entities, an industry advisory group that was set up at the start of the initiative was discontinued and there was little marketing or promotion activity aside from that passed by word-of-mouth.

Funding to **the Cawthron Institute** was mainly for improvements to infrastructure. It appears that these are unlikely to have occurred in the absence of funding. The improvements have enabled industry players to test and demonstrate the value of

their research in a commercial environment and pursue a wider range of research projects. Co-location of researchers appears to be enhancing research outcomes.

The facility has enabled a closer engagement with education providers and enhanced exposure of aquaculture as a career path in the region.

Funded infrastructure assisted the response to a virus that decimated the juvenile oyster population, enabling Cawthron to support part of the oyster industry.

Potential for wider application of the *Innovation Waikato* model

The three essentially local initiatives have followed different models with varying degrees of experimentation. Innovation Waikato Limited's model is innovative and appears to be relevant to (a) barriers to exporting experienced by NZ firms and (b) a new opportunity to build on the Dairy industry's existing strengths.

This model creates business opportunities rather than merely selling products, takes an NZ Inc. approach (involving a range of businesses and providing investment opportunities) and demonstrates that clustering can be an effective aid to internationalisation for small businesses. Export clusters require relatively little investment from small businesses and can reduce risk, lead to efficiency gains, improve bargaining power and provide access to support services while still allowing their members independence and choice.

Contents

2 Background and Policy

The Enterprising Partnerships Fund (EPF) is a contestable fund that was established 1 July 2007 to replace the Major Regional Initiatives (MRI) fund (an element of the Regional Partnerships Programme (RPP) which constituted the government's regional strategy from 2000 - 2007). The EPF is now closed.

2.1 The Regional Partnerships Programme

The key driver behind the original Regional Partnerships Programme was a sense that some communities and regions were being left behind economically, with negative impacts on their social and environmental well-being. The RPP was designed to address issues such as:

- poorly coordinated activity impacting on regional development, both at a central level and between central and local government;
- insular thinking in regions about regional development and competition between regions; and
- under-utilisation of regional resources and lack of regional strategic thinking.

Under the RPP, 26 regions were formed and funded to develop regional economic development strategies and to build economic development capability through more productive use of existing resources rather than the transfer of resources from other regions. The MRI was intended to catalyse support for major projects aimed at enhancing regional strengths.

Regional factors influence the ability of New Zealand to grow, retain and attract globally competitive firms and government services often depend on local leadership to be effective. To better harness resources and enhance alignment with national-level goals, the government introduced three new funds in 2007 to replace the RPP: the Enterprising Partnerships Fund (EPF), the Regional Strategy Fund, and the Enterprising Auckland Fund. This evaluation is primarily concerned with the EPF.

A 2007 evaluation of the RPP noted that underlying both the RPP and the EPF policies was a belief that regional economic development is under-resourced and that regions need to place a stronger emphasis on economic development in order to realise their potential. This view appeared to be shared by local government and other stakeholders who perceive an opportunity to stimulate enterprise and innovation systems at a regional level; and to influence and enhance regional economic planning; both directly with financial support for these activities, and indirectly through supporting major regional projects.

Both the RPP and the EPF appeared to rely on the following assumptions:

- Regions contain some distinct socio-economic conditions and these conditions influence their rates of innovation and economic development.
- Innovation and economic development conditions can be accurately defined at a regional level and this is best done by a range of stakeholders in the regions themselves (businesses, business associations, local bodies, and EDAs).

- Planning and consequent investments at the local and regional level can enhance these conditions and lead to national net economic benefits.

The 2007 evaluation of the RPP found that:

> "The diversity of [MRI] projects carried out under the RPP has resulted in some projects that are significant at both the regional and national level, such as the Marlborough Wine Centre, Hawke's Bay Apple Futures, and the Wool Industry Network in Canterbury. These projects affect not only the region in which they emerge, but have the potential to affect an entire industry or a core part of an industry, particularly through the innovative leadership they offer. There appears to be an opportunity for these projects to further develop should this become a priority for the government.
>
> Generally however, the success of MRI projects is somewhat difficult to determine due to reporting requirements being heavily focused on outputs and accountability requirements, rather than outcomes. The move to establish KPIs for later projects is invaluable and is continued under the new programmes to ensure more outcomes-focused information is collected.
>
> In some instances, MRI projects undertaken would have benefited from longer-term partnership and financing arrangements than the programme allowed for. This could have taken the form of continued support from the RPP, or other government initiatives such as sector projects delivered by both MED and NZTE. This can now occur through the RSF if projects are seen as a regional priority under their Regional Economic Development Strategy."

The change away from the RPP and MRI came from a decision by the government in 2006 to refresh its approach to regional development policy [CAB Min (06) 31/4]. It was agreed that the existing RPP would be reshaped, with the objective being "to improve the quality of the regional business environment to support the development, attraction and retention of globally competitive firms" [EDC Min (07) 3/4].

2.2 The Enterprising Partnerships Fund

The EPF made funding available for initiatives that:

- Further the creation or exploitation of regionally-based partnerships and networks, and other regional institutions, that promote knowledge sharing, facilitate innovation processes and grow international connections;
- Involve and benefit multiple regional stakeholders (rather than focus on individual firms or sectors), with evidence of meaningful and useful collaboration required;
- Are commercially driven and have a strong commercial component, while building on areas of economic opportunity identified through a region's (or regions') strategies and generating substantial economic benefits and opportunities for the region(s); and
- Align with the government's national economic goals and priorities, where these have been articulated, and are consistent with the government's broader economic, social

and environmental goals and New Zealand law and international obligations [EDC Min (07) 3/4].

Projects to be funded were selected based on their merits relative to other projects, as well as their ability to contribute to both regional and national economic outcomes. It was intended that funded initiatives would be financially self-sustainable at the completion of government support. Funded initiatives were required to secure at least 30 percent of the total cost of each project from outside of central government. Applicants had to be endorsed by their regional governance group(s).

Up to two funding rounds were held per year, with funding decisions made by Cabinet. The amount of funding per project was limited only by the amount available in the fund. The decision to hold the second funding round of the year, and the amount of funding available in that round, depended on the amount of funding remaining in the annual appropriation following Cabinet decisions in the first funding round.

The Enterprising Partnerships Fund was part of the Regional Partnerships and Facilitation Baseline. During the fund's operation, money from this baseline (including unused EPF funds) has been reprioritised for use in other economic development initiatives such as CNI Iwi Funding, the New Zealand Food Innovation Network and the Canterbury Earthquake Business Support Package.

Amounts of funding available in each year of the fund's operation are set out in Table 1.

Table 1: Annual appropriations of the EPF

Year	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
Annual appropriation (as in 2007 Cab papers)	$9.25	$10.45m	$10.45	$11.45m	$9.2m
Amount used for the EPF	$5.9m	$0m	$1.69m	$0m	$0m

In order to ensure consistency with the Crown Entities Act 2004, MED is responsible for providing advice to Cabinet and monitoring funding contracts, including verifying all claims and reporting. NZTE has a role in communications regarding the fund, working with applicants to develop proposals and providing assistance if necessary in the contract monitoring process. The NZTE Board also contributes to the advice to Cabinet on funding proposals that will be prepared by MED, in consultation with other departments.

Applications to the Enterprising Partnerships Fund

The EPF has funded three projects since its inception, with a number being declined in rounds two and three.

Funding Round One (applications closed 1 Aug 2007)

There were two applicants and both received funding.

The Applied Design Research Centre (ADRC). This is discussed in more detail later.

Innovation Waikato Limited (IWL). This is discussed in more detail later.

Funding Round Two (applications closed 15 April 2008)

There was one unsuccessful applicant:

GoEducate Foundation in the Hawkes Bay.

This application was for a private tertiary training establishment. It did not meet eligibility criteria on two counts: (1) securing 30% regional/industry contribution and (2) the proposal was more appropriately funded from another government programme.

Funding Round Three (originally closed 16 Feb 2009 but was extended to 16 June 2009)

There was one successful applicant:

The Cawthron Institute in Nelson. This is discussed in more detail later.

This funding round contained a number of unsuccessful applications and enquiries.

Bluff Farmed Oysters Limited

Funding was sought to assist franchising of innovative IP and design technologies in order to accelerate the development of a collaborative Industry Strategy Model for a 'new' farmed Bluff Oyster export industry. The application did not meet the eligibility criteria because it did not have demonstrable partnership aspects. Bluff Farmed Oysters subsequently withdrew their application and MED suggested that the company could be more appropriately assisted through NZTE's programmes.

Inside Victorian Oamaru (Waitaki Development Board).

Horoirangi: Wakatu (part of Cawthron application). This is discussed in more detail later.

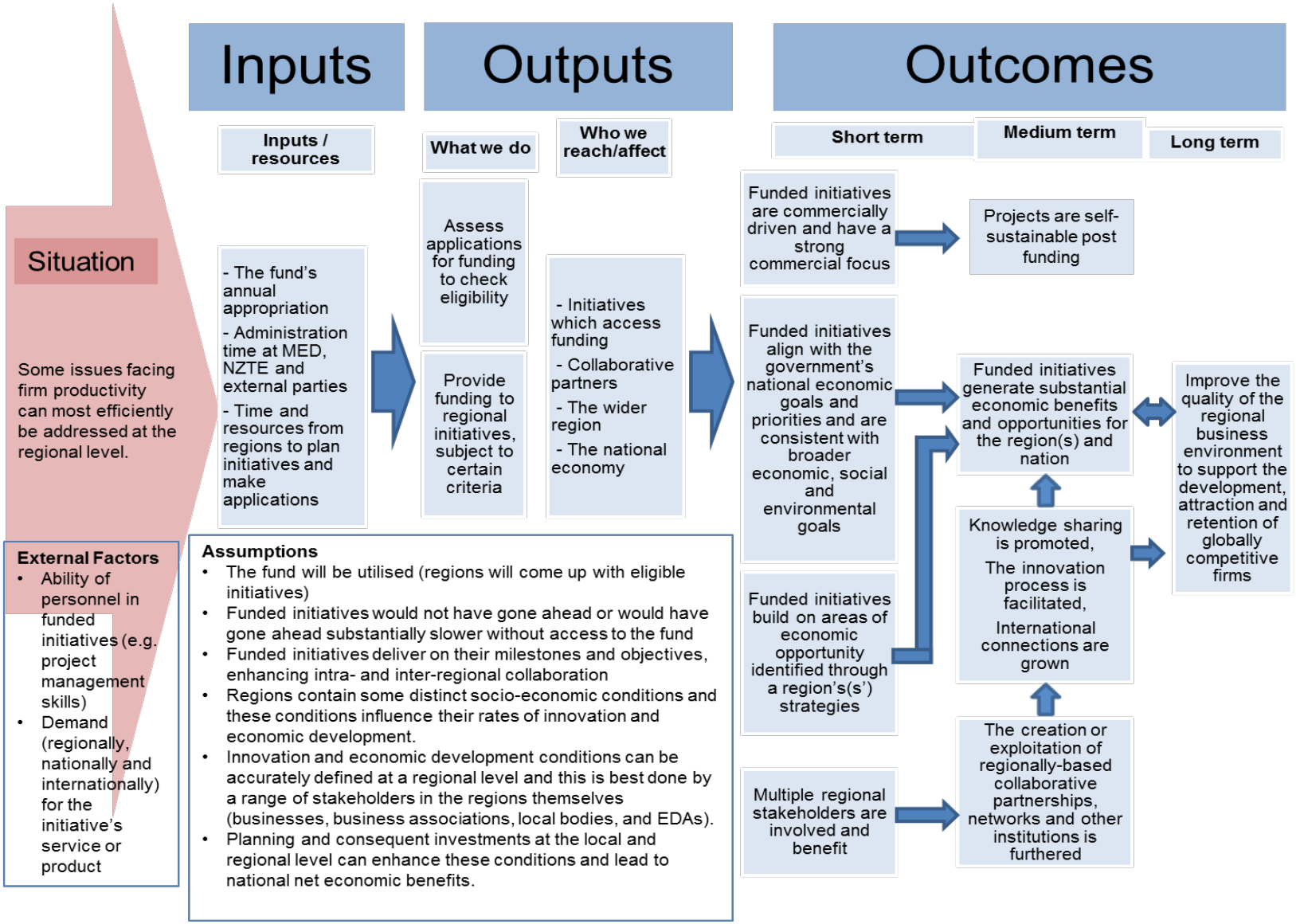
Queenstown Film Studio (Otago)

Titanium Development Centre (Bay of Plenty)

The latter two initiatives decided that they still needed more time to develop a compelling, high quality proposal and elected not to submit applications in this round.

2.3 Policy rationale and intervention logic

The policy rationale set out in the logic diagram below is based on cabinet papers and minutes [refer to CAB Min (06) 31/4; EDC (07) 18; EDC Min (07) 3/4].


Inputs
Outputs
Outcomes
Inputs / resources
What we do
Who we reach/affect
Short term
Medium term
Long term
Situation
Some issues facing firm productivity can most efficiently be addressed at the regional level.
- The fund's annual appropriation
- Administration time at MED, NZTE and external parties
- Time and resources from regions to plan initiatives and make applications
Assess applications for funding to check eligibility
Provide funding to regional initiatives, subject to certain criteria
- Initiatives which access funding
- Collaborative partners
- The wider region
- The national economy
Funded initiatives are commercially driven and have a strong commercial focus
Projects are self-sustainable post funding
Funded initiatives align with the government's national economic goals and priorities and are consistent with broader economic, social and environmental goals
Funded initiatives generate substantial economic benefits and opportunities for the region(s) and nation
Improve the quality of the regional business environment to support the development, attraction and retention of globally competitive firms
Knowledge sharing is promoted,
The innovation process is facilitated,
International connections are grown
Funded initiatives build on areas of economic opportunity identified through a region's(s') strategies
Multiple regional stakeholders are involved and benefit
The creation or exploitation of regionally-based collaborative partnerships, networks and other institutions is furthered
External Factors
• Ability of personnel in funded initiatives (e.g. project management skills)
• Demand (regionally, nationally and internationally) for the initiative's service or product
Assumptions
• The fund will be utilised (regions will come up with eligible initiatives)
• Funded initiatives would not have gone ahead or would have gone ahead substantially slower without access to the fund
• Funded initiatives deliver on their milestones and objectives, enhancing intra- and inter-regional collaboration
• Regions contain some distinct socio-economic conditions and these conditions influence their rates of innovation and economic development.
• Innovation and economic development conditions can be accurately defined at a regional level and this is best done by a range of stakeholders in the regions themselves (businesses, business associations, local bodies, and EDAs).
• Planning and consequent investments at the local and regional level can enhance these conditions and lead to national net economic benefits.

2.4 Purpose of the study

The purpose of this study is to review the operation and outcomes of the Enterprising Partnerships fund and draw lessons for any future funding initiatives.

2.5 Structure of the report

The remainder of this report sets out the methodology followed, followed by an assessment of the value of the EPF to business growth, comparing it to a series of non-funded initiatives. It then sets out a series of conclusions on the Fund. At each stage it draws on examples and lessons from the three initiatives funded under the programme, which illustrate both different implementation models and different outcomes.

3 Methodology

While this is an evaluation of the fund as a whole, the fact that only three initiatives have been funded makes it difficult to draw general conclusions. The evaluation has therefore largely taken a case-study approach and used the findings and lessons from each initiative to inform recommendations for the funding of future initiatives.

A variety of perspectives were obtained by basing analysis on desk research, interviews with the initiatives and their clients and a brief survey of users. The Applied Design Research Centre also commissioned an external evaluation of their initiative, as per the funding agreement. The findings of this have been considered as part of the analysis of that initiative.

Considering the different models that the various initiatives followed to utilise the funding that they received provides valuable insights into ways in which to structure future initiatives with which the government is involved.

4 The funded initiatives

The three initiatives funded through the EPF had very different focuses and substantially different models. The ADRC focused on design, Cawthron on infrastructure for aquaculture Research and Development and IWL on an agritech export cluster.

4.1 The Applied Design Research Centre

The Otago Institute of Design (OID) was set up as a collaboration between the Otago Polytechnic and the University of Otago “as a conduit for anyone wanting to engage in design-related services” (Collier and Gray, 2011). The ADRC was established as a unit to build competencies that would support new business development. Specifically, areas of work specified in the original Funding Agreement included sustainable design, strategic design, interaction design, products and services (such as furniture, medical technologies and agricultural technologies), design audits and executive education.

Other units within the OID included the Dunedin Fashion Incubator, the Sustainable Habitat Challenge, Evolver (a project-based design innovation process) and the Product Development Centre (PDC).

A 2004 evaluation of the Polytechnic Regional Development Fund (a fund "to enable and encourage institutes of technology and polytechnics to collaborate with local industry and enterprise to develop skills related initiatives that will support regional and economic development") found that while there was a need for institutes and polytechnics to develop in this area and that the fund had had a positive effect, there were no systemic barriers to collaboration (MED, 2004). The Tertiary Education Commission's Business Links Fund addressed capability to engage with industry, but was disestablished through Budget 2010.

The original Funding Agreement in 2008 stated that once established the Applied Design Research Centre would meet the following objectives:

- Create a combined centre of excellence in education and research;
- Increase technology transfer enabling economic transformation through wider commercial uptake of design practices, leading to better products and services and greater export opportunities;
- Provide a vehicle for on-going collaborative projects between the institutions in support of a Tertiary Education Commission "Network of Provisions" expectations;
- Facilitate industry engagement with design practices;
- Promote excellence in commercial design practice, both locally and nationally; and
- Assist in putting Otago on the map as a region producing world-class design, and elevate OID as the equal of international world-class Design Institutions.

4.1.1 Core aspects of the Applied Design Research Centre's model

- There was a divergence of view among the management of the ADRC and MED regarding whether the focus of the initiative was on commercial business opportunities or capability development.
- The initiative was institutionally based and focused.
- Promotion of the initiative was primarily via word of mouth.

4.1.2 Governance

The governance structure in place is likely to have contributed to the ADRC being prone to focusing on the objectives of the polytechnic than the needs of businesses in the region. A past general manager of the ADRC noted that the polytechnic and university may not be the right organisations for a project like this because they don't have the right focus or drive.

In 2010 the University decided to diminish the importance of design within its programmes. Comments from a few individuals implied that this may have reduced the university's engagement with the ADRC. There was some feeling that the relationship with the university was less well defined than with the polytechnic.

The general manager of the ADRC was initially the director of the OID. Approximately halfway through the funding period an interim, and then a fulltime fixed-term general manager were employed.

While the ADRC directly worked with a number of project leaders, it only had 1.5 designated fulltime employees, exposing the initiative to key-personnel risk. This risk was realised, since the ADRC did not appoint a fulltime General Manager until nearly halfway through the agreed timeframe for funding. This general manager chose to move on when, due to the cessation of funding, his contract expired. This slowness meant that the ADRC did not appear to get any real traction with industry until an appropriate, dedicated person was appointed in this role and reduced the potential impact that the ADRC could have had on businesses.

The Dunedin City Council noted that if there had been no funding, the fulltime general manager wouldn't have been employed and there would consequently have been no industry buy-in. This highlights the reliance of the model on one key person.

Initially, an ADRC Industry Advisory Group consisting of 12 members from industry was formed. This was "to advise the Director and to maintain communications between OiD-ADRC and industry/community stakeholders… to ensure the ongoing relevance of OiD-ADRC activities." This group only met once, shortly after the initiative began. According to the Director of the OID, neither of the subsequent general managers "who were working directly with MED seemed to feel such further meetings were required," although contacts were maintained with all parties individually.

This industry group did not have a strong influence on the ADRC. It is unclear why this group was not reconvened, but both NZTE and the Dunedin City Council commented on how the ADRC's governance had a strong academic focus. It was thought that a stronger governance structure would have included more members of industry, to keep the initiative focused on industry's needs, in addition to individuals from agencies such as NZTE and the Dunedin City Council, to keep it focused on Economic Development opportunities.

4.1.3 Activities/approach

The ADRC was able to assist with the whole process from design to prototype. Resources were utilised from within the OID and external suppliers where necessary.

Most engagements with the ADRC came about through word-of-mouth and informal connections established by the General Managers. As noted above, the fulltime General Manager was only employed halfway through the funding, possibly limiting the extent to which the ADRC was able to engage with industry, although it was claimed that most of the ADRC's activity over its entire period came from engagements before this general manager as employed. The external review of the ADRC interviewed a number of businesses that had not used the ADRC, but which might be expected to be able to engage with it. This survey found that there was a fairly good level of awareness among the industry of the existence and capabilities of the ADRC.

While prior work by the co-ordinating board for Otago Forward had suggested a role for something like the ADRC, NZTE and the Polytechnic had differing views on which firms to

focus on. There appears to have been some divergence regarding whether the initiative was meant to be focusing on existing industry needs or seeking to develop capabilities that would develop new business.

4.1.4 Use of funding

Not all of the available funding was used. Funding of $1.9m was provided for the establishment of the ADRC, and particularly to provide design services, research and education to industry across the region and beyond. The funding period was for 7 August 2008 through until 30 June 2011. The last payment for the ADRC was made on 29th March 2012 and $1.06m of the available $1.9m was paid to the polytechnic.

An external review of the ADRC determined that it had partially achieved funding objectives.

According to the ADRC, funding was firstly used to confirm capability needs and develop a structure and contacts; and then to develop competencies through subsidising design projects for clients.

Post-funding, the contacts and work of the ADRC have been extended by the various OID operations, including the Innovation Workspace. The Manager of the new Innovation Workspace estimates that about half of the Innovation Workspace's projects have come about due to awareness of the ADRC, PDC and Evolver. The Innovation Workspace is more closely integrated with the Polytechnic than the ADRC was.

4.1.5 Lessons from the Applied Design Research Centre's model

There are a number of lessons to learn from the ADRC's model.

1. Communication between MED and initiatives is critical when developing and executing funding arrangements. There appears to have been divergence of opinion on what the ADRC was trying to achieve and how it would do so.

2. Funded initiatives should be clearly addressing an identified need and have substantial input from industry at the governance level to ensure that economic benefits can be passed on.

3. Reliance on a single person is risky and has the potential to derail initiatives. The ADRC's ability to make use of the funding available to it and to have a positive impact on businesses in the region was probably reduced by the fact that the ADRC had no fulltime general manager until nearly halfway through the funding period.

4. More promotion and advertising may have increased the ADRC's impact on businesses by raising greater awareness within the region and beyond.

4.2 Innovation Waikato Limited

The Waikato Innovation Park was established in 2004 under the government's MRI programme. The park was set up to encourage incubation, innovation and clustering of firms. Part of the Park's activities is carried out by IWL; particularly supporting offshore business development for New Zealand agri-technology companies. These offshore

activities are carried out by two subsidiaries: Dairy SolutioNZ and Beef SolutioNZ. Dairy SolutioNZ is further advanced down the internationalisation path and the examples examined in this report are to do with Dairy SolutioNZ.

4.2.1 Core aspects of Innovation Waikato Limited's model

- IWL is facilitating a commercial cluster of agri-tech businesses to adapt New Zealand's pastoral dairy system to other countries' conditions in order to enable it to be exported.
- Products and services are integrated.
- There is strong leadership from IWL, which actively works to close deals.
- The focus is on creating business opportunities in new markets.
- The model follows an NZ Inc.-type approach.
- Small companies (who may not have the resources to enter new markets on their own) are able to benefit from and contribute to the collaborative approach.

4.2.2 Activities/approach

IWL has a rather unique model: one industry player that we spoke to noted that nobody else is doing anything like this or of this scale. Dairy SolutioNZ is about "doing business, not selling a product". Essentially, they are working with New Zealand partner firms to construct a package of New Zealand products and services. The New Zealand firms are all in the agri-technology sector but range in size from very large multi-nationals (e.g. Gallaghers) to smaller, predominantly domestic or single-international-market firms (e.g. PPP Industries). One of the crucial elements for success is getting New Zealand technologies and systems to work in other countries' local conditions.

4.2.3 Governance

IWL is 19% owned by Hamilton City Council and 81% owned by Katolyst, a local economic development trust. Eden Agri Capital has plans to acquire a 50% stake in IWL (Eden Agri Capital, February 2012). IWL has a corporate structure and is run by a CEO, who is supported by 4 global area managers. These managers cover: North America, East Asia, and the Pacific; Africa, Middle East, and West Asia; Europe and Central Asia; and South America.

IWL partners with venture capitalists to initiate the creation of new farm projects that make use of the complete system. This package is then sold as a complete system to these overseas partner farms or investors. In this way, Dairy SolutioNZ is creating a market for its own products and services. IWL claims that these farm projects wouldn't have gone ahead if someone hadn't put the package together.

The process IWL follows is:

1. Conduct a pre-sales opportunity discussion (funded by IWL)

2. Evaluation and development of business case (funded by customer and sometimes part by IWL, costs ~$120,000USD)
3. Contract, design and development (fee for service ~$150,000USD per farm)
4. Sell technology on a commission basis

One partner business noted that a drawback of this model is that it requires you to be able to sell the New Zealand system as a whole before the partners can actually sell any product. New Zealand's dairy system differs from other systems (for example the US) in that it is pastoral-based and relatively more expensive. Part of the challenge lies in convincing the buyer that they can produce more for less by using the New Zealand system.

IWL's model offers small firms opportunities to sell overseas which they wouldn't otherwise have had or been able to pursue. This is because many small firms do not have the available capital or management time to pursue and win large international contracts on their own (Buckley, 1989; Lu and Beamish, 2001; OECD 2008). IWL does much of the leg work for the supplying businesses, making internationalisation easier for those involved. What's more, many of the opportunities to sell wouldn't have existed without IWL packaging up and selling the system in the first place.

While there will always be risk arising from the weakest link (typically smaller businesses) in a package like this, the model minimises it. This was a point made by one of the partners we talked to. The package approach provides a strong umbrella within which small businesses can sit, giving them greater negotiating power with banks and other firms. This increase in negotiating power improves their ability to raise capital and meet their obligations, reducing the risk that they will not be able to meet the supply demands placed on them by international contracts.

Another aspect of the model is the NZ Inc.-type approach which presents a united front in overseas markets. Competing onshore while operating as a monopoly offshore has been promoted as one of the most effective ways for New Zealand businesses to operate (Rachel Griffiths' address to MED, 2011). This is what IWL is doing; even to the extent of working with competing firms within the package of goods and services.

IWL are also working with the New Zealand venture capital firm Eden Agri-Capital. Eden Agri Capital was set up to fund IWL's strategy because raising money directly into IWL was too risky for the company. Eden Agri Capital's plans for the future include commencing development of a Canterbury Innovation Park based around cropping/arable land and a Bay of Plenty initiative based around horticulture (Eden Agri Capital, February 2012).

Using New Zealand capital extends the NZ Inc. approach and helps to ensure that farming profits from the projects themselves (beyond the mere export value of the package) are captured locally. This also gives foreign investors confidence: they like to see New Zealand 'skin in the game', even if they could have raised all the capital themselves.

In places where Eden Agri-Capital is not willing to invest (for example in Pakistan and the Ukraine) IWL is looking at other venture capitalists such as Cartesia, a New York-based fund worth two billion US dollars.

One of the large firms interviewed was critical of the model being pursued. This company already had an established distribution channel in the market in question and saw the projects as an opportunity to make one more sale, rather than a chance to open up a whole new way of doing business. This model takes time to make that sale: the company described IWL as needing to have a lot of ducks in a row before they would get anything out of it. For these reasons they did not see it as creating a good distribution channel. In their view, a 'hub' would be a better proposition. It is interesting to note that a smaller company stated that they saw the real opportunity of the projects as being the on-going sales through the distribution channel that was being established because there are lots of similar overseas projects that they can be part of. This partly depends on the nature of the product or service being sold. It is true that this model takes time to make a sale, but then, so do other models when a firm is breaking into a new market. It appears that this is simply a matter of perspective. Smaller companies may be more receptive to this model than bigger companies who can afford to create their own distribution channels.

4.2.4 Use of funding

The Waikato Innovation Park was given $2m towards the construction of a second building at the Park and $2m towards the Park's offshore business development activities[1].

The original funding period was for 20 October 2008 through until 30 June 2011. $860,000 of available business development funding was not used during this period. The Waikato Innovation Park requested that this be available for another year and the agreement was extended for one further year until 30 June 2012.

4.2.5 Clustering

IWL is running a commercial cluster that assists agritech companies to collaborate for internationalisation. Professor Rowarth from the University of Waikato is quoted as saying that the Waikato is "really the Silicon Valley of agribusiness" (The University of Waikato, 2012). The region contains over 150 agritech companies (Eden Agri Capital, February 2012). Professor Rowarth states: "we've got the vital critical mass… the crucial next step for the smaller companies is getting collaboration right, and bulding trust" (The University of Waikato, 2012).

Commercial clusters are business networks and strategic alliances amongst small groups of companies joining together to develop a particular market or solve common issues (MED, 2005). "Cluster policy can be a long and costly process, with the impacts only being able to be examined in the long term" (Ketels, 2003 in Huggins & Williams, 2011).

However, export consortia, or clusters can be particularly helpful in the internationalisation process for SMEs because:

- They require relatively little financial investment

[1] It should be noted that EPF funding is just one of a number of types of funding that Innovation Waikato Limited has received.

- They are not expensive in terms of human capital
- They are sufficiently loose (which means that partners can still decide and do many things independently)
- They can be managed in such a way that partners only need to participate in the initiatives they are really interested in.

Pooled resources allow the exploitation of economies of scale without losing flexibility and increase firms' bargaining power, allowing members to obtain products and services at better conditions.

Benefits to firms include: risk reductions, improved profitability, efficiency gains, knowledge accumulation, and access to specific services and support. (UNIDO, 2003; 2009)

A 2005 MED evaluation of funded clusters found that "cluster success factors include: facilitation, strong industry leadership, good levels of social capital, the existence of a common and identifiable objective and recognition that collaboration is necessary to achieve it, and seeing tangible results from collaborative effort (Med, 2005)." IWL has all of these factors, barring tangible results for the companies involved. However, it appears that these are likely to flow in the near future.

4.2.6 Lessons from Innovation Waikato Limited's model

1. This model creates business opportunities rather than merely selling products.
2. The model particularly benefits small businesses, reducing resource constraints and risk.
3. The New Zealand Inc. approach maximises the potential benefits for New Zealand.
4. Clustering has the potential to be an effective aid to internationalisation.

Private sector initiatives like this one can work to close deals. This is not the case with public-sector-led initiatives.

4.3 The Cawthron Institute

4.3.1 Core aspects of Cawthron's model

- Cawthron's approach to using EPF funding is to provide 'enabling' industry-good infrastructure for growth of the New Zealand aquaculture sector.
- The initiative is institutionally based.

4.3.2 Governance

The Cawthron Institute is a not-for-profit organisation owned by the Cawthron Trust Board on behalf of the people of the "Top of the South". "The Trustees approve the strategic direction of the Cawthron Institute, fund a range of science and education focused community initiatives, and appoint the Board of Directors.

The Board of Directors supervises the management of the Cawthron Institute and establishes its strategic objectives, the overall policy framework within which Cawthron's research and business is conducted, and monitors management's performance. The Board has delegated, within defined limits, the day to day management to the Chief Executive." (cawthron.org.nz)

4.3.3 Activities/approach

Cawthron's vision is "to be an internationally recognised research organisation delivering independent, world-class science that helps to build a better future for New Zealand." The model they are following with regard to their use of EPF funding takes an infrastructure-based approach.

EPF funding has been used to assist with the development of a shared research, development and education facility and infrastructure surrounding this on Cawthron's aquaculture park at Glenduan in Nelson. Space is available for lease by seafood companies, research organisations and education providers. Cawthron simply provides and maintains[2] the facilities – it does not actively provide business support or promotion to those leasing space in the facility, although staff regularly liaise with business. Tenants (including Cawthron's own aquaculture and biotechnology group and oyster spat business) are charged market rent.

The Cawthron Institute follows its own trust-based objectives. It actively seeks to facilitate collaboration between businesses and connects with industry in its day-to-day work. It has a number of international research and technology collaborations and, for example is currently working with the French to seek a response to the oyster virus.

Cawthron itself has a focus on research, services and consultation rather than commercialisation; although its CFO noted that it is always looking for a line-of-sight-to-impact from its research. In accordance with its objectives, Cawthron also undertakes education-focused community initiatives.

4.3.4 Use of funding

The Cawthron Institute was awarded $1.69m from the EPF to support the development of a shared research and development and education facility and related infrastructure on its site in Nelson.

The contract began on 30 March 2010 and is due to expire on 31 July 2015. Cawthron have made three claims to date, totalling $1.1m.

In general, 40% of Cawthron's revenue comes from MSI funding, 30% from commercial contracts and 30% from laboratory testing (presentation by Daryl Wehner, 19 Sept 2011).

[2] This includes biosecurity management of the facility.

4.3.5 Lesson from Cawthron's model

- Funding for infrastructure developments is likely to have a longer payback period
- However, the Cawthron example shows that funding infrastructure developments can produce significant opportunities for industry, as explained in the next section.

5 Value to business growth

The three funded initiatives have had varying values for business growth.

The ADRC does not appear to have had a substantial impact on existing businesses within the region in terms of the exposure of design and its contribution to new sales and export opportunities. It has engaged with a relatively high proportion of government funded entities, possibly crowding out commercial opportunities. There are some positive signs that the new Innovation Workspace is engaging more with industry and contributing to export opportunities. The Innovation Workspace is supplying similar services to those of the ADRC but at market prices rather than subsidised rates: it is not clear that there was a need for EPF funding to carry out this kind of work.

There is clear evidence that IWL will shortly begin to generate returns for those partner companies which it is engaged with, even though they have not received much value from the initiative to date. It appears that some significant deals are about to be finalised and there is a strong pipeline of prospects. Interviews with partner companies suggest that there is the potential for spillover benefits. One of the main benefits that IWL offers businesses and the region is that the model it is pursuing is of NZ Inc. value – it shelters small, high-technology New Zealand companies and provides the combined resources to assist them to internationalise. The primary value of funding lies in accelerating the projects. Acceleration appears to have prevented IWL and its partner businesses from becoming tired with the initiative.

Funding to Cawthron was mainly to construct new facilities. Regardless of the fact that Cawthron has had less time to generate demonstrable value for businesses compared to the other two initiatives, there have been some observable economic benefits. The development of Cawthron's facilities has enabled industry players to scale up their research to demonstrate commercial value and has allowed Cawthron to pursue a wider range of research projects, both internally and for members of the aquaculture industry. Users of the facility noted that collocation of researchers is contributing to research outcomes and the facility has enhanced employees' morale and productivity. Aquaculture is an important part of the Top of the South's regional business environment. The facility has enabled a closer engagement with education providers and enhanced exposure of aquaculture as a career path in the region. Funded infrastructure assisted the response to a virus that decimated the juvenile oyster population, enabling Cawthron to provide support to the oyster industry. Funded infrastructure is unlikely to have been built without this backing.

The remainder of this section looks in more detail at the contributions of the initiatives to regional and national economic benefits and to the dynamics of their regional business environments.

5.1 Regional and national economic opportunities and benefits

5.1.1 Applied Design Research Centre

Businesses have derived value from and are satisfied with the work that the ADRC performed for them. This came out clearly in the external review of the ADRC that was conducted as part of the funding agreement and from the small number of firms that we surveyed. This reiterates the need for something like the ADRC. However, there seem to have been few economic benefits that could not have been provided on a commercial basis.

5.1.1.1 Technology transfer

One of the ADRC's funding obligations was to "increase technology transfer enabling economic transformation through wider commercial uptake of design practices, leading to better products and services and greater export opportunities." The ADRC seems to have facilitated technology transfer for those clients which it engaged with.

Many of the ADRC's clients were government-funded organisations such as museums, the Dunedin City Council, the University, the polytechnic and the Southern District Health Board. The ADRC enabled technology transfer to these organisations but their nature means that this was not always for commercial purposes. There appears to be more room to focus on commercial projects.

Before the ADRC was funded, the coordinating body for Otago Forward (the regional economic development agency) had identified a need for an initiative within the region to plug the gap in companies' design. The ADRC provided an opportunity for this. However, as noted in the section on the ADRC's model, it appears that the centre itself was not driven by existing industry demand. The polytechnic believed that the value of the ADRC lay in developing new design capabilities within companies, rather than addressing needs that businesses were already aware of.

The Innovation Workspace has obtained a number of higher value commercial projects. Feedback from some of these clients indicates a high level of satisfaction with the Innovation Workspace's contribution and ability to add design expertise that the client did not possess. This may be an indication that the restructured initiative is taking a stronger focus on industry's needs.

5.1.1.2 Export opportunities and connections

The original Funding Agreement specified that the ADRC was to have an international, as well as a domestic focus; one of the EPF's objectives is to "grow international connections". The ADRC claims that performing these activities was discouraged by MED. Much of the design work performed was for domestic applications (such as signage, casings and displays) rather than export opportunities. An example is a case that was designed for Bike NZ to transport bicycles. This case has export potential, but the client wanted it for their own personal use, not to produce and sell.

Another example of the ADRC's work is a number of exhibits for the Otago Museum. We were told that the Museum would not have undertaken to work with the ADRC on these exhibits if they had had to pay commercial prices. These exhibits appear to have been highly successful at attracting visitors. While this represents a social benefit to the region in terms of culture and heritage, it does not in itself imply regional economic benefits, unless they were instrumental in encouraging additional tourists to visit the region. The Otago Museum is in discussions about selling the exhibits to another museum overseas. This would probably be a one-off sale rather than on-going exports.

The ADRC views the Otago Museum opportunity as a good example of where capability (rather than a commercial opportunity) was developed through collaboration, and noted that this kind of work would previously have been undertaken outside of New Zealand.

There are a few cases where work has led to identifiable export opportunities, although products are often still in the market development stage. Two examples from the medical field include designing and sourcing components for a continuous positive airways pressure device to assist unconscious patients and sufferers of sleep apnoea, and an oral medical device. This latter device is being kept highly confidential and is yet to be proved, but the entrepreneur who has developed it believes that when fully developed and commercialised, it could have potential sales of "tens of millions of dollars per year". In most cases it is difficult to attribute results directly to the ADRC because design is only one of many elements in the process of bringing a product to market.

The larger clients of the new Innovation Workspace that we talked to indicated that the work that had been performed for them had helped them to develop a product or service that had led to (or was likely to lead to) new sales and export opportunities. One of the companies stated that they were hoping to be able to generate $3 million in export sales in five years' time from the development. Again, this may indicate that the restructured initiative is meeting industry needs and enhancing export opportunities.

5.1.1.3 Additionality

It is not clear that the ADRC could not have gone ahead without EPF funding. Post-funding, the Otago Institute of Design is still performing similar work through the Innovation Workspace, but now charges market prices.

The value of the funding appears to be that it allowed a fulltime general manager to be employed, rather than a general manager with other obligations and responsibilities within the OID, and that the subsidy encouraged firms to use the ADRC, helping to raise awareness of the initiative. The extent to which the ADRC engaged with industry appears to be largely due to the networks built by the various general managers of the initiative.

Most of the clients that we surveyed stated that they knew of other design companies that they could have used for the work that the ADRC performed for them. About half of those surveyed had used the ADRC because of its locality and a number stated that it was because of the expertise that they could provide.

5.1.2 Innovation Waikato Limited

IWL's offshore business development services are generating economic benefits for New Zealand firms. Initially this has been as collaboration and international connections. Now, these collaborations and connections are translating into deals for the partners involved.

In a quite literal sense, IWL is creating business opportunities. As discussed above, IWL is taking a new approach and creating investment opportunities rather than simply exporting products and services. The value of this to companies depends on their size and their contribution to the cluster. One particular company's exports will be quadrupled if the projects in Columbia go ahead (see Table 2, below).

These tables illustrate the wide range of international investment and export relationships that IWL has facilitated. In addition to those in the tables, IWL is also scoping opportunities in India, Ethiopia, Mozambique and Tanzania (with NZ Aid).

IWL estimates that the whole portfolio of projects will generate over $100m of exports over the next 10 years. IWL is currently focusing on certain opportunities and putting other leads on hold in order to deliver on the ones that they've already got. There is impatience from some stakeholders over lead time and IWL is addressing this.

Table 2: Deals closing now

	WaikoAliar pilot farms	Miraka Jato pilot farms	Promision pilot farms
Total project capital*	IWL has specific estimates that are commercially confidential		
Full scale**			
ODI to Columbia via Eden Agri-capital			
New Zealand Agri-tech exports to develop the farm			
On-going licences and services per annum, post commissioning from year 3			
On-going return on equity to Eden Agri-capital investors per annum, from year 8			

* NZ and foreign contributions

** If successful, growth to full scale will be in same proportions as original pilot

Table 3: Projects underway

Project	**Total project capital** (NZ and foreign contributions)
Columbia: NZ Aid	IWL has specific estimates that are commercially confidential
Hawaii Dairy Farms	
Pakistan: Interloop	

Table 4: **Pursuits**

The pursuits below are still evolving and figures are only estimates.

Pursuit	Value	Description
Columbia	IWL has specific estimates that are commercially confidential	
Corpoica - Tibatata.		Very similar physically to Hawaii design
Ministry of Agriculture		Consultation for forestry and dairy strategy
Ministry of Agriculture		Establishing a Landcorp-equivalent organisation. The single biggest opportunity in front of them - over 4m Ha of land is under mandate from the Columbian government
Pacific Rubiales Farmers association		
Planta Ecologica Beef Processing		Beef, not dairy
Costa Rica		Yoghurt Plant
Mexico		4 farms. Could be sheep, beef, dairy or dairy goat. Reasonably uncertain outcome at this stage.
Pakistan	IWL has specific estimates that are commercially confidential	
Style Textile Limited		
University of Faisalabad and Excel World Limited		
GIGA Group		
Paraguay		
IPTA		Similar scope to Hawaii and Corpoica farms
Ukraine		Interest from Cartesian Private Equity, a $2b New York fund.

IWL is also creating benefits for New Zealand Agri-tech businesses from collaboration and spillovers.

Some of the organisations involved in Dairy SolutioNZ include: LIC, Gallaghers, Milfos, PPP Industries Ltd, CRV Ambreed, Agriseeds, Animal Breeding Services (ABS), NDA engineering and Wintec.

5.1.2.1 Benefits from collaboration between companies

IWL is seeking entirely new market opportunities based on the packaging of goods and services to meet new customer requirements. This requires collaboration.

As mentioned in the section on IWL's model, operating in a consortium can be particularly beneficial to small firms who do not have the resources to enter new markets by themselves. The consortium also reduces the risk faced by the smaller businesses involved and provides them with more bargaining power. This was noted by businesses we talked to.

The collaborative NZ Inc. approach being taken (including outward direct investment (ODI) from New Zealand) presents a united front when competing in international markets. Competing onshore and establishing a dominant market position offshore ensures that New Zealand maximises potential profits. ODI ensures that profits from the farms are captured by New Zealand, ensuring greater wealth creation than that from exports and licencing alone.

One company noted that cost savings exist from the scale of operations achieved by the consortium – for example in combined shipping.

5.1.2.2 Collaboration with the Waikato Institute of Technology (WINTEC)

WINTEC is working with IWL to develop agriculture education resources. IWL wants resources that it can use for training individuals in New Zealand and overseas.

WINTEC see agri-technology education as an area where there is a great opportunity, since enhancing workers' skills can raise farms' productivity. Dairy SolutioNZ is working with technology companies and WINTEC sees this to be where the real value for them in engaging with IWL lies.

5.1.2.3 Scope for reputational spillovers

IWL is particularly active in Columbia. IWL stated that the Columbians saw the New Zealand system working in Uruguay and Chile and that this gave them confidence to try it in Columbia. One of the businesses involved in Dairy SolutioNZ, noted that the success of other New Zealand firms in Chile encouraged them to expand into the market. This indicates that projects of this nature can produce reputational spillovers; both in terms of encouraging foreign firms to try New Zealand's products, and New Zealand firms to try to enter a foreign market. There may well be similar spillovers to New Zealand if IWL is successful in Columbia and elsewhere. One of the companies interviewed stated that IWL is breaking ground that others will follow; implying that they believe the projects will have reputational spillovers.

5.1.2.4 Other benefits

The partners that we interviewed noted that they had not yet gained a lot of value from IWL. What they could see, however, was some certainty in terms of deals coming through (see tables above) and that the profile of the initiative has been raised. Specific benefits noted by the businesses we interviewed included:

- These are completely new markets for many of the companies involved.
- The package and opportunities wouldn't have eventuated without a facilitator.

- The potential for on-going sales – little opportunities (pilots) lead to big ones (full scale).
- There may be other opportunities outside Dairy SolutioNZ with the other partners, although most stated that they had not built any new connections like this. One of the companies interviewed mentioned that the opportunity for further networking existed, but noted that they don't have the time to follow up.

Half of the EPF funding ($2m) was allocated to the construction of an $8m building, called the Tetra Pak building. Tetra Pak (a Swedish multi-national packaging company) is the main tenant of the building and is not involved in Dairy SolutioNZ or Beef SolutioNZ. IWL sees the benefit of the building as being twofold:

1. The financial support that it provides to IWL (a 9% per annum on-going yield).
2. Physical assets provide credibility – foreign companies go online, look at the building and are impressed. There is a backlog of people (1,800m^2 worth) wanting space in IWL's facilities. Competition for space is likely to lead to companies valuing their presence at the Park and making full use of the opportunities arising from it.

5.1.2.5 Additionality

IWL believe that Dairy SolutioNZ would have gone ahead without EPF funding, but would have done so much slower. They estimate that they would probably only currently have the Aid project in Columbia (a fairly small project) if they hadn't been funded. Those driving the initiative stated that if the projects had developed much more slowly they would probably have got "tired" of them.

The partners involved are likely to have got "tired" too – interviews with some of the same firms in 2011 noted that some of them were thinking of pulling out if they didn't see results soon. If the process had taken any longer these partners may have pulled out of the projects, reducing the ability of the package to work together as a whole and creating negative consequences for the other businesses involved. Without funding to speed the process up, the cluster may have collapsed.

IWL believes that without funding they wouldn't have the staff they have and the design stage of the projects wouldn't have been able to happen. It is important to note that one of the companies interviewed stated that IWL having good people has been one of the points of difference with PGG (a similar, non-funded initiative discussed below in section 6.1.2)).

IWL sees the value added by funding to be acceleration in the rate that opportunities can be created and taken, rather than addressing market failures such as spillovers or asymmetric information.

Some of the companies stated that without IWL's assistance, they would not have been able to enter the markets that IWL has taken them to.

5.1.3 The Cawthron Institute

Funding for Cawthron was approved approximately two years after that to the other two initiatives and is still on-going (the funding agreement is until 31 July 2015 and there is still approximately $600,000 available). Compared to the other funded initiatives, Cawthron has had less time to generate economic benefits and we would not necessarily expect to see

these reflected in quantitative outcomes yet. This is particularly the case for an R&D facility such as Cawthron, where it may take 12-15 years for a research project to come to commercial fruition. However, there are a number of softer, qualitative benefits that have arisen and some roughly quantifiable outcomes.

Funding has been and is being used for developing infrastructure. This has included new buildings (consisting of wet and dry laboratories, meeting spaces and offices) and facilities (new ponds and the installation of a biosecurity unit).

On-site users of the new infrastructure include: SPATnz (a Greenshell mussel research company whose three shareholders Sealord Group, Wakatu Incorporated and Sanford Limited represent about 70% of the processing side of the mussel industry), Cawthron's oyster spat business, Cawthron's aquaculture and biotechnology group and the Nelson Marlborough Institute of Technology (NMIT). Space in the facility is leased at market rent, including to Cawthron itself.

The most frequently cited economic benefits have arisen directly from extending the space in Cawthron's facility. This has had a number of effects:

1. SPATnz have been able to expand their operations to pilot commercial scale

Prior to the expansion, SPATnz was working in Cawthron's smaller facility. The increased lab space has provided them with their own area in the facility. SPATnz stated that this has been the biggest change for them and that they don't know how they used to operate beforehand. Previously they couldn't do research for, say, a month, while the facilities were being used by others. The fact that they now no longer have to share with Cawthron means that they have been able to scale up from research to pilot commercial size and increase their staff numbers. While it is hard to say whether SPATnz would have gone elsewhere if Cawthron had not expanded, they couldn't have scaled up in the old building and it is unlikely that they would have been able to afford to develop their own infrastructure. There is scope to further expand on the current site.

SPATnz has been working on selective breeding of the Greenshell Mussel. They have also received Primary Growth Partnership (PGP) funding of $26.1m from the government, matched by industry. A PGP media release based on figures provided by BERL states that "the programme aims to deliver additional revenue in the order of $230M per annum by 2026 for the New Zealand economy… Direct economic benefits are estimated at $122 million pa for GSM [Greenshell Mussels] and $13 million for flat oysters." [Media backgrounder, 1 Feb 2011, PGP]. While these estimated economic benefits cannot be directly attributed to EPF funding, the expansion of the facility has played a part in allowing SPATnz to scale up their research and demonstrate commercial value.

2. Cawthron can conduct more and a greater variety of research

In the past, Cawthron had been restricted by having to share space with SPATnz. Cawthron stated that now that they have their own dedicated space they can conduct more research and collaboration in any one year, allowing them to investigate other species and diversify their research, creating new possibilities for commercialisation. For instance, they now have research programmes on pacific oysters, flat oysters, mussels, scallops and Geoduck all on the go at the same time. Geoducks are a high value ($30US/pound wet-weight) shellfish with

established international markets. The research on scallops is on behalf of a project sponsor who approached them. Cawthron may not have had the capacity to take on this extra work in the past, although it is possible that other research institutes could have performed the work.

As well as diversification, the designated space is allowing Cawthron to conduct long run research into things such as shellfish physiology, which is an area where there is relatively little known compared to land-based livestock such as cows. Research in this area may help to increase the productivity of aquaculture in New Zealand.

3. Involvement of the Nelson Marlborough Institute of Technology

NMIT are running a two year polytechnic course within their own section of Cawthron's facility. They have fitted the premises out themselves. Graduates obtain Level 4 and 5 qualifications in aquaculture. NMIT noted that it would have been difficult to integrate into Cawthron's old facility and that they probably wouldn't have a salt water aquaculture course if it were not for the EPF expansion because it would have been prohibitively expensive for them to build their own facility from scratch. Benefits from collocation are discussed below.

4. Other members of the industry are interested in on-site engagement

Details of companies' intentions are commercial-in-confidence, but there are a number of firms who are interested in moving on-site or deepening their current engagement.

5.1.3.1 Collocation is leading to knowledge sharing

Collocation has been beneficial for those involved. SPATnz noted that the communal lunch room facilities have been highly valuable. Problem solving occurs at lunchtime when staff from Cawthron and SPATnz get together to share the issues they are having and draw on each other's expertise and experiences.

Cawthron's Aquaculture and Biotechnology Group believes that if SPATnz had not been able to scale up, the combined research collaborations and outcomes that have been achieved wouldn't have been able to happen because they would not have had as many staff on-site.

Collocation has also been beneficial for education. Having researchers, companies and students all on the same site means that students can interact with industry experts and gain exposure to the wider aspects of the industry.

Cawthron and SPATnz occasionally provide practical work experience for students, increasing their attractiveness to employers. A number of students have jobs already lined up for when they graduate. NMIT has also engaged with four Nelson secondary schools for a Year 13 NCEA Biology module. This creates exposure for aquaculture as a career path in the region.

5.1.3.2 Other benefits

SPATnz stated that having nice facilities has added a lot to staff morale and enjoyment, and has improved productivity. They also noted that the increase in office space and availability of computers has been very beneficial for data collection and recording results.

Cawthron's CFO noted that the building increases media coverage, thereby raising the profile of the facility amongst industry and the community.

An example of a roughly quantifiable benefit for the aquaculture industry has come about from Cawthron's installation of a biosecurity unit (part-funded by the EPF). Cawthron's increased scale and the biosecurity unit has enabled it to increase the volume of its oyster spat production and continue supplying the oyster industry during an on-going virus outbreak which has killed many juvenile oysters.

Cawthron's website has reported that a third of the oysters harvested by the industry in New Zealand came from Cawthron's hatchery. Cawthron is in a good position to increase its supply to the industry if the continued presence of the virus necessitates an even greater reliance on hatchery rather than wild spat. If Cawthron was unable to produce commercial volumes of hatchery spat, the industry would have to continue relying on the decimated crop of wild spat.

Box 1: Pacific Marine Farms and Cawthron's Response to the Oyster Virus

In 2009 and again in 2010 and 2011, a seasonal virus decimated juvenile oysters in the Northern North Island. The implications for the oyster farming industry are huge: the majority of farmed oysters come from spat (oyster 'seeds') that are captured in the wild. Once the current stock of growing oysters is exhausted there will be little wild spat to take its place.

The Cawthron Institute is currently the sole provider of hatchery oyster spat to the industry. Most of this is to Pacific Marine Farms (PMF) which has millions of dollars' worth of assets and makes up roughly a third of the industry. When the virus struck, PMF was sourcing 80% of its spat from the wild and 20% from Cawthron. The selective breeding of hatchery spat offers a higher rate of return and PMF was looking to transition to using a greater proportion of hatchery spat. The effect of the virus on PMF was to reduce the available wild spat by about 60% of normal volumes, leading to about a 50% decline in revenues – a multi-million dollar impact. This is indicative of the industry as a whole.

When the virus reached Cawthron itself it created an urgent need for a biosecurity unit (part of the planned use of EPF funding). Delivery of the unit was reprioritised, allowing Cawthron to produce virus-free spat. This unit, along with the extra capacity arising from the extension to the facility, put Cawthron in a better position to respond to increased industry need for hatchery spat.

In 2009 PMF were sourcing about 20% of their spat from Cawthron. Most of these were lost to the virus. In 2010, as a response to the virus, they doubled the volume that they requested off Cawthron and tried to get them into the water quicker so that they could grow bigger before the virus came around. About 70% of these were lost to the virus. In 2011 they more than doubled their request again and changed their strategy. They are currently using farms in the South Island (where the virus is not activating) to grow the oysters to a size big enough to resist the virus before transferring them to the upper North Island for finishing.

Due to problems with the virus, its inability to continue using wild brood stock without the biosecurity unit and a lack of scale, Cawthron was not able to full meet PMF's demand in 2011. However, it is in a better position for 2012.

PMF believes that it would have had to down-size if it did not have access to hatchery spat from Cawthron. Other industry players such as Sanford, who have not followed PMF's strategy of using hatchery spat, have had to close or downsize their operations. PMF noted that the rest of the industry is now sitting on the side-lines watching for the outcome.

PMF has been engaged in research with Cawthron for about 10 years. When the virus struck, they began to fund a research programme with Cawthron before EPF funding came on-board. However, at the time they would not have been able to afford the upgrades to the hatchery that were funded from the EPF and required to meet the demand for spat. Without funding, they would have to be starting the hatchery from scratch now, putting them several years behind where they currently are.

Cawthron believe that they have prevented the industry from collapsing. As it is, Cawthron's Aquaculture and Biotechnology Group estimates that an industry worth about $40m dropped to about $3.5m. Cawthron also believes that the industry has the potential to grow to $100m exports within 10 years. See Box 1 for more details.

Cawthron has gained international exposure for some of its work and is currently in discussions with the French regarding the IP around producing oyster larvae.

5.2 The dynamics of the regional business environment

5.2.1 The Applied Design Research Centre

As discussed earlier, it appears that the ADRC had less of an impact on industry in the region than it potentially could have, due to slowness in employing a general manager and an insufficient focus on industry. The ADRC was originally described as operating right across the region: Year 1 in Dunedin, Year 2 across Otago and Year 3 nation-wide. There are differing views on the extent to which this occurred.

The external review of the ADRC identified and interviewed a list of companies who had not used the centre, but who could potentially benefit from its services. Two thirds of the businesses talked to were aware of the ADRC. This suggests that there was generally a good awareness of the centre amongst the target population. The economic development unit at the Dunedin City Council thought that it had "majorly heightened awareness of what can occur through the Polytech", although NZTE in Dunedin noted that the top 500 businesses that it deals with had had very little engagement with the centre and many were not even aware that it existed.

The economic development unit at the Dunedin City Council noted that very little was done in terms of marketing the initiative. The external review found that most of the awareness was generated by word of mouth and that even amongst those who were aware of the centre there was limited knowledge about its specific capabilities. As for the ADRC, most of the larger clients of the Innovation Workspace that we talked to indicated that they were aware of what the centre could do from existing relationships. This suggests a role for more direct marketing. If this had occurred, more industry players may have been keen to engage with the ADRC and the initiative may have had a bigger impact on the regional business environment.

While the ADRC has somewhat raised the awareness of design in the region, this does not appear to have had a major impact on firms' appetite for design services. The approach taken appears to have diluted the impact that it might have had on generating regional business growth. However, some of the larger clients of the Innovation Workspace that we talked to stated that the engagement had increased their appetite for utilising design services in the future. A few of them also noted that having access to these design services locally was an important factor for them – it is much easier to engage on design face-to-face than remotely.

5.2.2 Innovation Waikato Limited

The Waikato region has a lot of small companies in the agri-technology sector in a similar situation to those involved in Dairy SolutioNZ. IWL has improved the regional business environment to the extent that it is offering opportunities to these small agri-tech businesses that wouldn't otherwise have the resources to put in the necessary time, effort and capital to expand offshore. IWL may also be producing reputational spillovers that will benefit other Waikato and New Zealand firms.

5.2.3 The Cawthron Institute

Aquaculture is an important part of the regional business environment in the Top of the South. The importance of aquaculture to the region is reflected in the fact that Aquaculture New Zealand (the industry body) is located in Nelson. Cawthron's work is constantly improving aquaculture technology and feasibility (for example the ability to farm in more open seas) and therefore has a close link to the industry in the region.

Aquaculture is a sector that is expanding rapidly. According to Wakatu, there are literally 1000's of hectares of water in the consenting process that have stage 1 complete and are being monitored for environmental impacts before going on to stage 2. Wakatu noted that this is partly due to regulatory changes that mean that you can get consents faster than in the past because you no longer have to go through the normal Resource Management Act process.

The expansion of Cawthron's infrastructure offers regional aquaculture businesses more opportunity to utilise the facilities; both in terms of locating on-site to conduct their own research and employing Cawthron to undertake research on their behalf.

Having NMIT located onsite and engaging with secondary schools raises the profile of aquaculture as a career path. This may induce young people to remain in the region and contributes to a stronger industry.

A study of the spillovers from publicly funded R&D centres in the UK found that they do tend to increase connectivity within and between regions. This occurred across both university-based and company-based research centres, although the effect was more extensive from university-based centres (possibly due to businesses' concerns about IP protection) (Roper & Hewitt-Dundas, 2009). These results suggest that a publicly funded research centre such as Cawthron can enhance connectivity within and between regions and demonstrate spillover benefits.

6 Counterfactual comparisons with non-funded initiatives

This section examines a set of similar initiatives which have not received support under the Fund, to examine the extent to which the initiatives were able to act differently or more effectively due to the funding.

6.1 Horoirangi: Wakatu – aquaculture in Nelson

Cawthron's original application to the EPF was in collaboration with Wakatu. This part of the application sought an extra $8.76m towards the development of seawater pipeline infrastructure for a commercial aquaculture zone on land owned by Wakatu Incorporation next to Cawthron's site. This was to be for private-sector land-based aquaculture activity. The stakeholders in this application included Cawthron (shellfish), NIWA (finfish), Plant and Food Research (post-harvest handling and packaging), and agreements with the universities of Canterbury and Otago (post graduate scholarships).

The application was declined on the basis that industry development would not be significantly inhibited in the absence of a government contribution. While NZTE doubts that not funding Wakatu has had negative consequences for the economy, the project has not yet gone ahead on a commercial basis. When asked about the status of the project, Wakatu

indicated that some aspects of the original application had begun to go ahead (such as trading in Paua) but that the main element of the project (the seawater pipeline) had not, and was hard to get going without substantial funding. There had been some interest from an international investor who would bring technology with them and talks were underway via NZTE's Investment team, but Wakatu noted that it was hard to sell the project to them without established infrastructure.

One of the aspects of the Wakatu application was to collaborate with NIWA to use the cold water available from the new pipeline infrastructure to develop farmed Hapuku (a cold water finfish). NIWA's current facilities in Whangarei are not suitable because the water is too warm. Sealord has recently decided to reduce its investment in aquaculture in NZ and is buying into the Australian Barramundi industry (we understand that this is a $60m investment). Wakatu believes that this is partly due to not being able to develop the Hapuku industry in New Zealand. This is a negative result for the industry, both regionally and nationally.

6.2 Manuka farms – dairying in Chile

The closest counterfactual to IWL that we found was Manuka farms. Manuka is a group of New Zealanders who have invested in Chilean dairy farms. They have exported the New Zealand system of dairying and are using it in Chile. In some ways this is similar to what IWL are doing with Dairy SolutioNZ. Manuka have invested approximately $150m of their own funds and borrowed another US$100m from a consortium of banks (Irish Farmers Journal, 2011).

The Manuka venture appears to be successful. However, they are following a very different model to IWL that does not possess the same NZ Inc. benefits, making IWL and Manuka not directly comparable. A comparison between Manuka's approach and that of IWL via Dairy SolutioNZ is outlined in Table 5.

Table 5: Manuka farms in Chile compared with Dairy SolutioNZ in Columbia

Manuka - Chile	Dairy SolutioNZ - Columbia
Market relatively familiar to New Zealanders	Completely new market
Temperate climate	Tropical climate
Bought land of existing farms	Bare/crops converted to dairy
3.4 cows per hectare	10 cows per hectare
Led by 2 farmers	IWL and Waikato consortia
Existing customers means secure demand	Shortage of milk supply in Columbia
Based directly on NZ way, informal	Distinct product definition – formalised, replicable across countries
Lowering cost of production through sound farm management	Lowering cost of production through sound farm management
Pasture	Pasture plus silage

Brought genetics and grass from NZ but little else	Works with smaller players - NZ Inc. value
Driven by investors	Driven by suppliers
NZ farmers operating in Chile	Training local Columbians in NZ technology

One of the key points of difference is that the Manuka farms are driven by dairy farmers looking for high-value dairy investment opportunities, whereas Dairy SolutioNZ is backed by industry suppliers looking for a way to increase sales of their products. Manuka farms are essentially an investment group investing in a business, whereas IWL is essentially a group of businesses looking to grow via internationalisation.

Another important point of difference is that Dairy SolutioNZ have put together a package of New Zealand products and services that is adaptable to various climates, whereas Manuka farms is investing in one area with a fairly similar climate to New Zealand.

The key similarity between the two is the use of the New Zealand pastoral-based system.

The difference in the models means that Manuka are able to personally capture all the benefits of their investments. This is not the case with IWL. In an export consortium, each partner business contributes to the other partner businesses involved. This may mean that individual partners may be unwilling to fund the development of the consortium because they cannot capture all the benefits. IWL's partners do not necessarily have capital to invest and require an external investor, whereas Manuka has invested their own capital.

IWL has the potential to increase the exports and stimulate the growth of the high-technology partner firms with which it is engaged. Manuka farms, on the other hand, are less likely to have a strong effect on the agri-technology sector and New Zealand, beyond the profits that it makes for the investors involved.

Manuka farms are not an exact counterfactual to IWL's Dairy SolutioNZ. While Manuka has been able to succeed without government assistance, it is following a very different model that does not possess the NZ Inc. benefits that IWL exhibits. The industry-good nature of export consortia makes them a candidate for government funding, whereas private investments do not require it.

6.3 Gallaghers – Agri-tech distribution in Chile

Gallaghers is acting as a distributor for three other New Zealand companies in Chile. This gives those other companies a very reliable partner in-market and imitates some of the benefits that the IWL package provides to small companies. However, it took Gallaghers well over 20 years to get traction in Chile and only now are they getting significant turnover. It was the free trade agreement, along with seeing other New Zealand companies' success (such as Manuka) which helped Gallaghers to see the potential in the market and gave them the confidence to ramp up their efforts. This indicates the existence of reputational spillovers.

Gallaghers' business model is different again – they are acting purely as a distributor and are not putting together deals and actively chasing opportunities for their partners like IWL is. The fact that it took Gallaghers so long to establish a strong presence in Chile indicates that government funding may have a role in accelerating success in foreign markets, especially when the initiative has significant benefits for a number of high-technology firms such as those IWL is dealing with.

6.4 Pine Gould Guinness (PGG) – New Zealand farming systems in Uruguay

PGG tried to do a similar thing in Uruguay to Manuka farms in Chile. We have been told that this venture has not been as successful as that of Manuka farms. IWL believe that PGG tried to grow too fast, focusing on asset growth rather than productivity, and didn't do their 'homework' about the market and employ good people. One of IWL's partner firms noted that PGG's problem was treating Uruguay like New Zealand and trying to take New Zealand's system straight in.

7 Review of the funding process

7.1 Initiatives' experiences with the process

Applicants' views of the application process varied. While some found it to be time consuming and expensive, others found it valuable for weighting funding towards critical milestones.

Views on on-going reporting requirements were also mixed, although the predominant feeling was that they were ok, so long as the initiative had appropriate systems in place.

Part of the government's policy push around business facing services is to encourage agencies to share relevant information in order to reduce compliance costs for businesses and make it easier for them to deal with government. One way to reduce compliance costs for organisations receiving more than one type of funding could be to roll together the reporting requirements for the various types of funding that the particular business receives. This would require government agencies to work more closely together to ensure that the necessary reporting requirements are specified and that information is shared.

The flexibility of funding has allowed initiatives to make more effective use of it. Cawthron was able to reprioritise milestones in order to respond to the oyster virus. IWL was given a year's extension to their funding agreement; allowing them to make use of money that had not been spent. Most people who we talked to believed that the contracts were reasonable, with flexible milestones, although there was some feeling that the administration of the funding agreements was inflexible and tied down every last little detail, limiting what was able to be achieved.

A flexible contract allows recipients to make the most effective use of funding: they can respond to situations as they arise and to changes in their operating environment. A degree of flexibility is important when funding innovative initiatives because often it is unclear exactly when and how much funding will be required for specific milestones.

The length of time that funding is available for is an important consideration. A number of people thought that three years' worth of funding was less than what was necessary for the ADRC.

It is easier to tie down appropriate time periods for funding when the milestones are infrastructure based, as they were for Cawthron or IWL's building. When funding initiatives such as IWL's offshore development activities, it is much harder to know how to structure funding because it can take a number of years for deals to come to fruition. For instance, Gallaghers (one of the counterfactual comparisons) took well over 20 years before they started generating significant profits in Chile and before they were in a strong enough position to act as distributors for a number of smaller companies.

MED's 2005 evaluation of the Cluster Development Programme found that "clusters are generally not self-sufficient after a two-year funding period" and noted that clusters need more funding and over a greater period of time to have a meaningful impact and approach self-sufficiency. Small amounts of funding for short periods of time may create perverse incentives for recipients to spend time (and funding) on figuring out how to obtain the next pot of money rather than making effective use of what they have received. One such strategy is to form new groups, which defeats the self-sufficiency objective of funding and harms continuity.

The Cluster Development Programme provided $50,000 per annum for two years, to contribute to the costs of employing a cluster facilitator, after which initiatives were expected to be self-sufficient. The case of IWL suggests that this is unrealistic. IWL's cluster development has received $2m of EPF funding spread over 4 years (when the extension is included) and is looking like it will be self-sufficient when funding ceases in mid-2012. IWL's CEO stated that "we have lurched from one bucket…to the next and we have been very lucky to survive, the EPF just saved us." He believes that the project would have collapsed if it had not received the rollover of funding when it did.

For initiatives like IWL, the latter stages of market entry and deal-signing can be the most expensive. These stages are where funding may be crucial for survival. Inflexible funding agreements or short time frames may cause an initiative to choke, right at the point when it is ready to fly.

It has been suggested that the most effective use of funding may often be to leverage off things that have already been supported to a certain stage, rather than looking at new projects. A small investment at this point can have big payoffs. This has certainly been true in the case of IWL. Rolling unspent funding over for another year has allowed them to close in on some significant deals and find their feet in international markets.

7.2 Choice of activities to fund

Decisions about funding infrastructure investments such as those at Cawthron need to take existing infrastructure and enterprises into account. For example, NIWA and Plant and Food Research also run aquaculture research centres. Further consideration could be given to what the initiative's point of difference is, whether a similar thing could be achieved with existing infrastructure and whether or to what extent the initiative could go ahead without

funding. Infrastructure that provides benefits to a wider industry but which would not be bankrolled by the industry may be a candidate for receiving government funding.

IWL, in contrast, is exporting capability rather than commodities. This is a step up the value chain and results in exports that are less constrained by New Zealand's resources (e.g. its size) and distance from markets. However, this process may have longer timescales that infrastructure development, which needs to be reflected in the funding model.

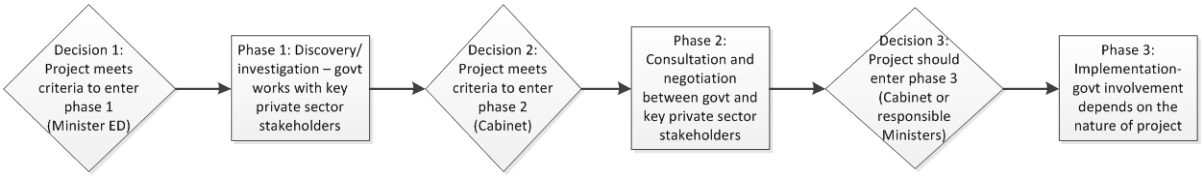
7.3 Comparison of EPF with other funding processes

The MRI scheme emphasised equality between regions. Smaller regions were given opportunities to access funding alongside larger ones such as Auckland. Regional councils and EDAs worked to identify and develop likely projects. Initiatives then worked closely with NZTE to apply for funding. Funding for each initiative was for up to $2m over three years.

The EPF was a contestable fund. A call was made for applications, which were then assessed to decide which would be most likely to give national as well as regional benefits. Under the EPF, the process was driven from the initiative level rather than the regional level. It became NZTE's responsibility to be in touch with regional initiatives.

The Transformational Initiatives (TI) process was set up to establish funding criteria and provide a consistent process for addressing opportunities and proposals. The original policy did not envisage a separate fund for transformational initiatives, but was designed to provide consistency when ad hoc requests arose. There was no call for proposals. The process was designed to involve Ministers at the appropriate level and time, but to also keep them at arm's length from the development of the initiative's proposal.

Figure 1: The Transformational Initiatives process



Criteria for entry to Phase 2:

- Has the potential to capture significant benefits to New Zealand (typically in excess of $1billion)
- Involves a major step change into new activites that enhance existing or build new capabilities around existing opportunities
- May involve an 'ecosystem' approach i.e. a network of capability
- Is structured around firms, institutions and the government partnering to achieve their respective objectives
- Is consistent with the government's broader economic, environmental, social and cultural goals
- Comprehensive feasibilty study to verify both the opportunity and the existence of New Zealand firms with the capacity and willingness to cpature the benefits is sufficient to

verify that the project is commerciallt sound and able to deliever wider benefits to the economy

- Clearly established role for overnment intervention (market failure, net economic benefit, acceleration etc.)
- Project complies with New Zealand's international trade obligations

Funds provide perverse incentives for recipients or potential recipients to behave in a way that is different from how they would usually behave commercially. When a fund exists, initiatives can tend to just want access to the money, rather than government involvement in the planning and execution phases. The contestable process at the initiative level (e.g. the EPF) can drive perverse behaviour, and has a tendency to lead to money-driven rather than needs-driven applications. Under the TI process there is no fund. If there is a case for funding something, then it is considered through reprioritisation and the budget process.

8 Conclusions

8.1 Scale and transaction costs

High transaction costs exist when developing proposals and applications for major initiatives of the kind funded through the MRI programme, the EPF and the TI process. It takes time to develop initiatives, get all the stakeholders to line up and agree to things, conduct economic studies etc. This is true for both parties. For example, the New Zealand Food Innovation Network took around two years to develop.

The existence of high transaction costs implies that there is a minimum efficient size of initiative to engage with. One of the criteria in the TI process is therefore that the project "has the potential to capture significant benefits to New Zealand (typically in excess of $1 billion)." A threshold of $1b of expected benefits might be a little too high – for instance, it would exclude all three initiatives funded under the EPF.

NZTE has more flexibility now than it has had in the past. This flexibility allows it to potentially work with the smaller initiatives that might otherwise have gone through the MRI or EPF.

8.2 Engaging with initiatives

The on-going execution of the initiative is critically important, not just its establishment. While it is important that initiatives are driven by industries' needs, this does not necessarily ensure success. There was a demonstrated industry need for something like the ADRC, and yet the initiative itself does not appear to have strongly focused on addressing existing businesses' needs. This suggests that there was a need for greater clarity around what the initiative was doing and why.

While the concept of the ADRC is relevant to industry, different execution may have led to a greater impact on regional businesses. A focused advertising effort may have helped more businesses to better identify where they could gain benefits from working with the ADRC. The network of economic development agencies could possibly be used to assist with advertising, especially when attempting to get national engagement with an initiative located in a particular region, such as those funded through the EPF or Transformational Initiatives funds.

The high transaction costs of developing proposals and initiatives imply that the government should engage with potential initiatives as early as possible. Early engagement allows the respective roles of the government and the private sector to be defined from the outset. Early engagement also ensures that good quality applications are submitted (reducing unnecessary costs later in the process) and poor quality or non-viable initiatives are weeded out before a significant amount of time and resources are invested by either party.

The MRI process, where initiatives worked closely with NZTE prior to applying for funding, tended to result in good quality applications, but not always good quality initiatives – the emphasis on equal access to funding meant that not all funded initiatives delivered results and may result in some worthwhile initiatives being left on the table. Some of the EPF applications developed by initiatives themselves were poor quality, meaning that the transaction costs were higher than they could have been. Working closely with initiatives from the start of the process may improve the quality of applications and reduce transaction costs.

A focus on ensuring excellent execution rather than simply negotiating a funding agreement could improve funding's effectiveness. This requires the government and the initiative to keep working together during the project and needs to be clearly established as an expectation at the start of the process.

8.3 Identification of initiatives for funding

Calling for proposals (as under the EPF) induces initiatives to identify themselves. However, as we have already seen, the initiative-driven nature of these applications meant that they were not always of a very high quality.

Under the TI process, the onus is on NZTE to be in touch with regions and sectors, and to identify opportunities as they arise. While proposals are not actively sought, this approach ensures that the government is involved in discussions right from the beginning of the process. Initiatives identified like this are also more likely to align with government's priorities than if they came to the government seeking funding to carry out an already developed proposal.

Discussing proposals with initiatives up-front allows the government to provide a check that initiatives are driven by an industry need, rather than simply a desire for funding.

8.4 Other lessons

Infrastructure investments under the MRI delivered mixed results. Central government should be seeking to build capability rather than assets alone. Programme design and implementation needs to reflect this, providing adequate time and flexibility.

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