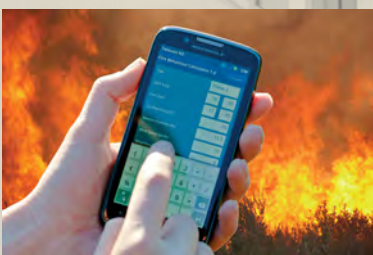




Prosperity from Trees

Statement of Corporate Intent
2013 - 2018





Prosperity from Trees

Statement of Corporate Intent 2013 - 2018

Published June 2013

Scion

49 Sala Street, Private Bag 3020

Rotorua 3046

New Zealand

This document is available on our website: www.scionresearch.com

Profile

New Zealand Forest Research Institute Limited – trading as Scion

Head Office: 49 Sala Street, Rotorua

Postal address: Private Bag 3020, Rotorua 3046

Web address: www.scionresearch.com

Ownership: Crown owned entity (established under the Crown Research Institutes Act 1992)

Governance: Shareholder-appointed Board: Chair, Tony Nowell (2010); Deputy Chair, Judith Stanway (2010); Directors Sheldon Drummond (2008), Chris Insley (2008), Brian Rhoades (2009), Lizzie Chambers (2012), Barry O'Neil (2012).

Executive Management: Chief Executive, Warren Parker; General Manager Manufacturing & Bioproducts, Elspeth MacRae; General Manager Forest Science, Brian Richardson; General Manager Sustainable Design, Trevor Stuthridge; General Manager Research & Investments, Russell Burton; General Manager People & Performance, Keri-Anne Tane; Chief Financial Officer and Company Secretary, Rob Trass; General Manager Business Development & Commercialisation, Steve Sopora.

Staff: 303 full-time-equivalent staff at five sites: Rotorua (280), Wellington (2), Christchurch (20), Dunedin (1).

Shareholder funds: Total book value of \$27.560 million at 30 June 2012.

Vision: Prosperity from trees - Mai i te ngahere oranga.

Core Purpose: To drive innovation and growth from New Zealand's forestry, wood product and wood-derived materials and other biomaterial sectors, to create economic value and contribute to beneficial environmental and social outcomes for New Zealand.

Values: Vital, innovative and collaborative.

Reporting: Financial and non-financial performance against SCI targets¹ is reported to the Shareholder quarterly and to the public via a six-month and Annual Report.

Shareholdings

| Company | Company type | Scion shareholding (%) |
|---------------------------------|---|------------------------|
| Future Forests Research Ltd | Subsidiary where the single share is held by Scion on behalf of the investors | 100 |
| Te Papa Tipu Properties Ltd | Land-holding subsidiary | 100 |
| ATLAS Technology Ltd | A non operating subsidiary | 100 |
| Biopolymer Network Ltd | An incorporated joint venture | 33.3 |
| WQI Ltd (Solid Wood Innovation) | An MBIE supported consortium in wood processing | 5.95 |
| Terax (2013) Ltd | A general partner in Terax Limited Partnership | 50 |

¹ Non-financial indicators include end-user collaboration, research collaboration, technology and knowledge transfer; and science quality. Definitions are provided on page 42 of Scion's 2012-17 SCI.

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Note to Reader:

This SCI should be read in conjunction with Scion's 2012-17 SCI which is available at <http://www.scionresearch.com/general/publications/statement-of-corporate-intent>. Scion's strategy; Science and Innovation Plan; performance measurement framework; and business and accounting policies have not changed from the 2012-17 SCI documents. Tactics, however, have been refreshed as outlined in this SCI, to reflect changes in Scion's external operating environment, new government science and innovation initiatives (e.g. the formation of Callaghan Innovation and launch of National Science Challenges), and industry developments (e.g. the likely introduction of a commodity levy for forest growers).

1. Chair and CEO overview

We are pleased to present Scion's 2013-18 Statement of Corporate Intent (SCI). This complements last year's SCI, in which Scion's strategy, science and innovation plan, and investment priorities are set out in detail. These documents are well-articulated with industry and iwi needs, and the Government's business growth agenda. In this SCI 'refresh' we therefore only update changes to the external operating environment; the allocation of Core (performance-based) funding; financial forecasts (to 2018) and reinvestment plans; and areas of heightened focus.

Our overriding priority is to accelerate execution of the strategy (opposite). In particular, the Board and management are focussed on strengthening implementation in two critical areas: commercialisation and technology translation. Both contribute strongly to the impact of new technology and knowledge developed at Scion; and our achievement of Core Purpose outcomes and to support the forest industry's target to achieve '\$12 billion of exports by 2022'.

Over the past year, Scion's external operating environment has changed with respect to: an uplift in market demand and prices for logs (especially China) and wood-derived products; changes to climate change legislation and international agreements; the formation of Callaghan Innovation on 1 February 2013; a forest grower mandate to introduce a commodity levy; heightened attention to the management of water quality; increased foreign direct investment (FDI) interest in New Zealand forests; and, through Government research, science and technology policy, the setting of national science challenges and formation of innovation 'hubs'. Each presents an opportunity for Scion and can be responded to within the current strategic framework and through our annual operating plan.

Scion is actively shaping a Rotorua-based 'Forest Industry Centre of Excellence' in order to attract new investment into the sector and facilitate regional economic growth. Our North Drive Innovation Park, industry tenants on campus (some 27 entities) and the Bay of Plenty tertiary initiative are central elements of this. To boost this initiative we are seeking external investment to enable the construction of a multi-functional building for aligned companies during 2014. Companies involved in the manufacture of bioproducts will be preferentially sought as tenants for this new facility. We will seek Grow Rotorua Ltd and Waikato Innovation Park's assistance with securing tenants.

Our workforce is being shaped to support future needs and the achievement of our Statement of Core Purpose. A high performance, customer-focussed culture is being built through a comprehensive staff development programme, changes to Scion's remuneration framework and improvements in recruitment. The latter aspects draw on findings from the pan-CRI project to enhance workforce planning and quality. This work complements our 10-year capital asset plan to develop a highly attractive work environment through the modernisation of buildings, laboratories and equipment; and installing pilot plant to support the scale-up of our most promising technologies. We are now into year three of our strategy and it is progressing to plan.

Despite the challenging economic circumstances, Scion expects to grow revenues in 2013/14 by 5.6% to \$47.839 million and achieve earnings before interest and tax and after reinvestment of \$2.171 million. This generates a return on equity before reinvestment of 7.9% and a tailored rate of return of 5.3%. Achievement of these returns is heavily predicated on securing current levels of funding in the 2013 MBIE science investment round. The financial forecasts to June 2018 account for the ongoing tentative global economic recovery; the challenges wood and wood fibre processors face with a high exchange rate and high log prices; the strong domestic stimulus for wood products arising from the Christchurch rebuild and Auckland housing shortage; continued expansion of Māori interests in forestry; and forest growers adopting a commodity levy (likely from 1 January 2014) with about 50% to be allocated to research and development. Notwithstanding external shocks, Scion expects to sustain its financial performance and capacity to invest in initiatives to assist the forest industry achieve '\$12 billion of exports by 2022'.



Tony Nowell
Chair

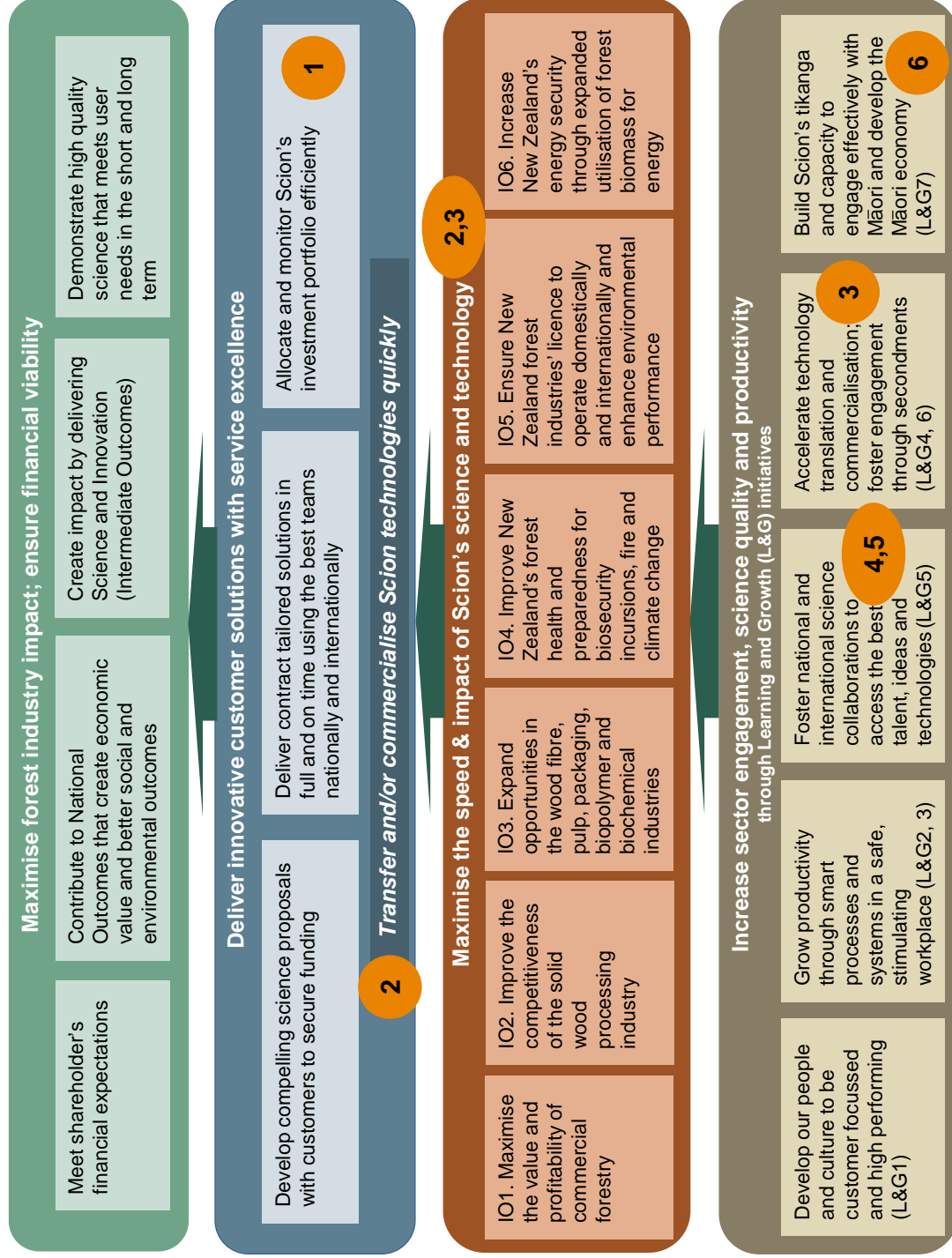


Warren Parker
Chief Executive

2. Strategic context and integration with Scion's 2012-17 SCI

Scion's strategy map (opposite), presented in its 2012-17 SCI set out the areas of focus for the next five years. The 'orange dots' indicate the priorities addressed in this SCI. These are:

1. Ensure Scion's performance-based funding framework is at national best practice.
2. Accelerate commercialisation and improve knowledge and technology translation through partnerships with lead innovators and 'sector champions', and improved internal systems and disciplines.
3. Apply reinvestment to speed-up commercialisation of Scion's lead products and the translation of its technologies to industry.
4. Develop the 'Forest Industry Centre of Excellence' and Scion's Innovation Park; engage with national science challenges and 'hubs'.
5. Establish joint projects with Callaghan Innovation to increase innovation in the manufacturing sector.
6. Support Māori economic growth through forestry.



3. Operating environment update

As indicated in the overview, important changes have occurred in Scion's operating environment over the past 12 months. They require, as outlined below, some tactical adjustment to Scion's strategy and annual operating plans.

Markets recover for logs and wood products: Strong export demand, particularly from China, for logs has improved returns to forest owners but added costs to the domestic wood processing sector. Fortunately, increased housing consents (locally and in the USA) and the Christchurch rebuild have partially mitigated the higher log prices. The strong NZ dollar (above US 80c) continues to squeeze exporters' margins. These market dynamics are consistent with the forecast global deficit in softwoods by about 2020 and highlight the critical importance of Scion's research to enhance the competitiveness of solid wood processing.

Demand for bioproducts is growing: Demand for bioproducts continues to expand rapidly in both the OECD and Brazil, Russia, India, China (BRIC) countries. This is supporting the growth of New Zealand companies involved in developing biobased products such as composites, renewable chemicals and packaging based on plant (e.g. forest) materials. Renewable chemicals markets are projected to reach US\$59 billion next year. The bioproducts category is forecast to expand to €200 billion in seven years. Several bioproducts were identified in the Woodscape study² as having the potential to support a step change in economic returns from a tree. This understanding is directing Scion's investment into bioproducts and bioenergy.

Low carbon prices impact forest plantings: Changes to the Climate Change Response Amendment Act in 2012 have significantly reduced forest planting intentions for winter 2013. Low carbon returns also affect Maori who are considering whether to continue land lease arrangements or undertake plantings to manage their own forests. A recent study³ suggests a further 39,000 hectares of deforestation may occur by 2020. A reduced area in plantation forests decreases New Zealand's

ability to benefit from impending global shortfalls in softwood supply and to meet its Green House Gas emissions reduction targets. Poorer (late 2020s) security of log supply may also deter new investment in processing supporting initiatives to grow. Growing the competitiveness of forestry as a land-use, including through short rotation special purpose species, therefore remains a high priority for Scion.

Bans on illegal logging and certification of forests will change global markets: Australia and the European Union have introduced legislation to ban 'illegal' logging. Only authenticated logs will be able to enter these markets. This will further reduce supplies of illegally harvested tropical hardwoods and presents an opportunity for New Zealand's certified plantation forests and expansion of the area planted in hardwoods such as eucalypts and indigenous species. This also adds impetus to Scion's work on log traceability in the supply chain and automatic scaling; and an opportunity to adapt technology and practice from the livestock industries (e.g. National Animal Identification and Tracing) and Global Standards (GS1) initiative⁴.

Māori interest in forestry expands: The Crown/Māori strategy for economic development, *He Kai Kei Aku Ringa*⁵, was released in October 2012. The associated action plan (2012-17) emphasised the importance of Māori building meaningful science collaborations with CRIs and universities, and of improving the performance of their land and other assets. A 2013 report on "Growing the productive base of Māori freehold land"⁶ indicates that at least 470,000 hectares is best suited to forestry. Both opportunities are aligned with Scion's Māori Plan to grow the Maori economy through forestry⁷.

More enquiries for non-radiata forest species: Radiata pine represents some 90% of New Zealand's commercial forests and will remain the dominant species for the foreseeable future. However, Māori and other forestry investors (and New Zealand's competitors) have a growing interest in species that can supply naturally durable timbers to expanding Asian markets,

² Woodscape (2013) *Summary Report: Overall outcomes, key messages and recommendations for next steps*. Report to the NZ Wood Council (February 2013).

³ Manley, B. (2012) *Deforestation Survey 2011. Final report*. Ministry of Agriculture and Forestry Technical Paper 2012/11. 16pp.

⁴ See www.gs1.org/ for background (Sourced 7 May 2013).

⁵ *He Kai Kei Aku Ringa, The Crown-Māori Economic Development Partnership (2012): Strategy to 2040 and Action Plan 2012-17*. Sourced at: www.tpk.govt.nz/en/consultation/medp/strategy/, 24 April 2013.

⁶ PWC (2013) *Growing the productive base of Māori freehold land*. Sourced at www.mpi.govt.nz/Default.aspx?TabId=126&id=1734, 7 May 2013.

⁷ Scion's Māori Plan has four themes: forming partnerships; strengthening investor relationships; improving communication and technology translation; and, developing Scion's tikanga and staff capacity to engage effectively with Māori.

provide short fibre for paper, and avoid the need for chemical treatments to improve durability. KPMG (2013) estimated annual revenue streams from indigenous species could grow to \$285 million per annum⁸. Reducing the health risk with a forest monoculture and adapting to climate change are other drivers of interest in non-radiata species. These drivers provide the impetus for Scion to increase effort in (for example) eucalypts, cypresses, Douglas-fir, kauri, beech and totara and to extend our understanding of export markets and supply chains for high value wood product exports.

Forest growers support a levy: Forest growers voted to support the introduction of a commodity levy in March 2013. If sanctioned by Government, as expected, the levy may be operational by 1 January 2014 and is projected to raise an estimated \$6.5 million per annum (with approximately 50% allocated to research). New industry structures (e.g. a trust board and research and development committee) will be required to oversee the use of levy funds. Current arrangements will continue until these are in place. The levy, though modest in scale, should give more certainty and flexibility for industry good research such as increasing forest productivity and health⁹.

Wood processor associations to merge: The Wood Processors Association and the Pine Manufacturers Association are planning to merge late in 2013 to form a single point of co-ordination for wood and wood fibre processors. This will place them in a better position to also introduce a

levy and coordinate with forest growers. The New Zealand Wood Council (Woodco) continues as the forest industry's umbrella organisation. However, its strategic action plan to achieve \$12 billion of exports by 2022 remains under-resourced.

Callaghan Innovation to boost high value manufacturing research: The formation of the new Crown agent on 1 February 2013 represents a fundamental shift in the Crown's focus for growing the high value manufacturing sector. It presents Scion, now the largest provider of manufacturing research and development among the CRIs, a significant opportunity to boost its 'high end' wood and wood fibre manufacturing and bioproduct development research. The new entity will also assist Scion to translate its expertise and technology (such as for renewable packaging and bioenergy products for household consumer goods) into other industries.

National science challenges launched: The Government announced 10 challenges on 1 May 2013¹⁰. These challenges provide new impetus to connect science providers to tackle 'big' national problems. Scion expects to participate in several of the challenges, including 'New Zealand's biological heritage'; 'Our land and water'; 'Science for technological innovation'; and, 'Resilience to nature's challenges'. These will begin to impact Scion's programmes and core funding investment from late 2013. The 11th challenge, 'Building better homes, towns and cities', is highly relevant to Scion's capabilities and may be initiated later.



Terax (2013) Ltd has been formed with the Rotorua District Council to commercialise the TERAX™ technology for municipal biosolids.



Dr Heidi Dungey (Forest Genetics Science Leader) and Trade Minister Tim Groser at Scion's research nursery discussing the growing interest in indigenous species for commercial purposes.

⁸ KPMG (2013) *Indicative value analysis of New Zealand's privately owned indigenous forests*. Report to MPI (March).

⁹ PWC (2013) *Growing the productive base of Māori freehold land*. Sourced at www.mpi.govt.nz/Default.aspx?TabId=126&id=1734, 7 May 2013.

¹⁰ See www.msi.govt.nz/update-me/major-projects/national-science-challenges/. Sourced 7 May 2013.

4. Scion's implementation priorities

Scion's purpose¹¹ is to drive innovation and growth from New Zealand's forestry, wood products and wood-derived materials and other biomaterial sectors to create economic value and contribute to beneficial environmental and social outcomes for New Zealand.

Our strategy (see page 5) and Science and Innovation Plan are designed to support these sectors to improve their productivity, value chain coordination and product innovation. We are achieving these aims through strong industry engagement, targeted access to national and international science and technology, collaboration with other research providers and partnerships with iwi.

The most important areas for increased focus in this SCI are how we execute technology transfer and commercialisation. These processes will directly assist the forest industry to achieve its '\$12 billion by 2022' export target and support the Government's Business Growth Agenda to grow exports to 40% of GDP by 2025¹². Executed well they will also encourage firms we work with to increase their investment in research and development.

I. Accelerate commercialisation (Initiatives 1, 2, and 3 on the strategy map, page 5)

More effective commercialisation of Scion's technologies will increase its research impact and financial resilience. The TERAXTM (reducing the solid outflow of municipal treatment plants) and Woodforce (Sonae; wood plastics¹³) technologies are at the forefront of this work. However, Scion has a much deeper pipeline across the value chains it is engaged with, including modified wood, renewable energy, composite materials, genetically modified (GM) trees; and, through ATLAS, software decision support tools. Customers and investors are already engaged with us in all of these technologies. Callaghan Innovation's mandate is to accelerate commercialisation in the advanced manufacturing sector, including within 'high end wood processing'; consequently, we are implementing a charter with them to strengthen the commercialisation of these technologies and their application to other sectors.

Accelerating commercialisation, however, has many challenges - building internal expertise and capacity, ensuring access to working capital, managing risk and adopting the 'best' methodology/vehicle. To further improve commercialisation of its technologies, Scion will:

1. Further systemise pipeline management of technologies to ensure resources are aligned to projects with the greatest potential impact.
2. Preferentially invest in the Woodforce wood plastic pellet and TERAXTM biosolids waste technologies.
3. Implement a charter and initiate new projects with Callaghan Innovation.
4. Seek new sources of investment for technology commercialisation.
5. Undertake capital planning for pilot plant (such as a supercritical CO₂ plant for modified wood) to scale-up and de-risk technologies.
6. Develop staff expertise in technology commercialisation through tailored workshops and secondments to firms and mentoring.

II. Improve knowledge and technology translation¹⁴ (Initiatives 2 and 3 on the strategy map, page 5)

Effective knowledge and technology translation underpins the uptake of Scion's innovations and knowledge. It is axiomatic to maximising Scion's impact. Earlier and higher levels of technology uptake are primary drivers of returns on research, science and technology investment and therefore priority areas for Scion to improve. While Scion was acknowledged for the quality of its efforts to credibly measure and/or demonstrate impact (both ex ante and ex poste), the 2012 CRI Balance Sheet Review recommended that all CRIs seek opportunities to make improvements in impact assessment and reporting.

¹¹ For the full statement see www.scionresearch.com/general/publications/statement-of-core-purpose

¹² For details see, www.mbie.govt.nz/what-we-do/business-growth-agenda

¹³ See www.woodforce.com for details about this product.

¹⁴ The term technology translation (rather than transfer) explicitly acknowledges the importance of user engagement in the process of introducing new knowledge, technologies and practices that enable change in individuals, communities or industries.

Scion currently enables technology translation through:

- workshops and developing training material;
- a targeted visitor programme to Scion and company visits;
- Scion's website and YouTube video clips;
- media releases, trade articles and Scion's newsletter *Scion Connections*;
- user guides and software decision support tools;
- commercialisation of products and services with firms;
- secondments of staff into firms (and vice versa);
- sponsorships and support of conferences, workshops and students;
- inclusion of new knowledge into NZQA learning units and degree programmes such as those with the University of Canterbury and Waiariki Institute of Technology; and
- science journals, conference proceedings and other publications.

Staff secondments, enabled by L&G6 reinvestment, to Kaingaroa Timberlands, CHH Kinleith & Kawerau, and DoC have been highly successful for the hosting firms and generated new research to support these companies in meeting their objectives .

To further improve technology translation, Scion will:

1. Identify and work with sector 'change' champions and adapt 'best practice' from other industries, such as dairy.
2. Extend the application of techno-economic models to ensure all technologies optimally align with user needs and enable best packaging of technology for end-users.
3. Upgrade communication methods, including the Scion website and *Scion Connections* newsletter; and, for iwi by 'putting more tangible products in their hands' and utilising established communication channels within Māoridom.

4. Establish a 'big data' L&G initiative (L&G 8) to improve the sharing, analysis and interpretation of the very large data sets generated through Scion's research programmes. This will be achieved by drawing on expertise already in the CRIs and the wider science community.

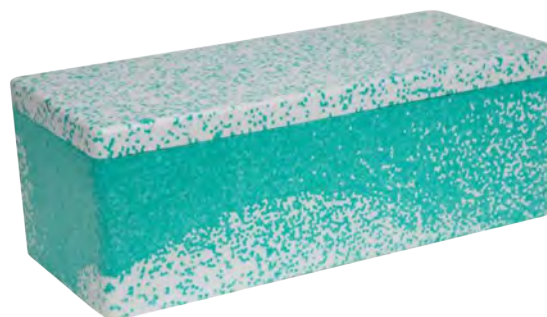
III. Partnering, innovation hubs and national science challenges (Initiative 4 on the strategy map, page 5)

Scion has established a wide array of relationships and collaborations with universities, CRIs and international research entities. Examples are shown in Table 1 and illustrated by Figure 1.

Scion plans to continue to nurture these alliances and relationships, while seeking ways to improve their operational efficiency. Some, such as the Sustainable Land Use Alliance (SLUA) and Better Border Biosecurity (B3), with governance and multi-party coordination mechanisms in place, are potential platforms for the delivery of national science challenges.

The Biopolymer Network Ltd¹⁵ (BPN), of which Scion owns a third, has an exciting pipeline of technologies coming through to market realisation. This includes a light weight, decomposable Zealafoam product for fresh food packaging that can meet hard regulatory drivers and the requirements of customers in export markets.

Scion will also work closely with industry as it evolves current structures to meet the post-levy needs of forest growers, the wood processor associations' merger, and implementation of new and extended Primary Growth Partnership (PGP) programmes (e.g. in bioenergy, and steep land harvesting through Future Forest Research). Consequently, elements of Figure 1 are expected to change significantly over the next 12-24 months.



The Biopolymer Network's Zealafoam product was developed with Scion for uses such as packaging for fish exports to Asia.

¹⁵ See www.biopolymernetwork.com for background about the company and its bio-based solutions.

Table 1: Further examples of Scion partnerships domestically and internationally

| Relationship | Parties involved | Focus areas |
|--|---|---|
| Materials Accelerator | Universities of Auckland & Waikato, Callaghan Innovation, Scion, MBIE | New bio-based composite materials and products from this |
| Sustainable Land Use Alliance (SLUA) | AgResearch, Plant & Food Research (PFR), Landcare Research; Scion | Sustainable land-use and management |
| Better Border Biosecurity (B3) | AgResearch, PFR, Landcare Research; Scion, MBIE, MPI, FOA | Primary industry pre- and post-border biosecurity |
| Bioresource Processing Alliance (BPA) | Callaghan Innovation, PFR, Scion, Universities, MBIE | Bioprocessing technology for new products, process efficiency gains, and waste re-use and reduction |
| Canterbury University | School of Forestry, other faculty | Forest biosecurity, silviculture, mechatronics |
| Waikato University | Bay of Plenty Tertiary partnership | Postgraduate programmes, executive education |
| Massey University | School of Design, College of Science | Industrial design and packaging technologies (including with new materials) |
| VTT (Finland) | VTT (Australia) | Forest industry and new bioeconomy science and technology solutions |
| Forest Product Innovation (Canada) | NZ Wood Council | Forest industry revitalisation, value chain synthesis and new technologies |
| Korean Institute for bioenergy Research (KIER) | NZTE | Thermochemical technologies for wood-to-biofuels) |

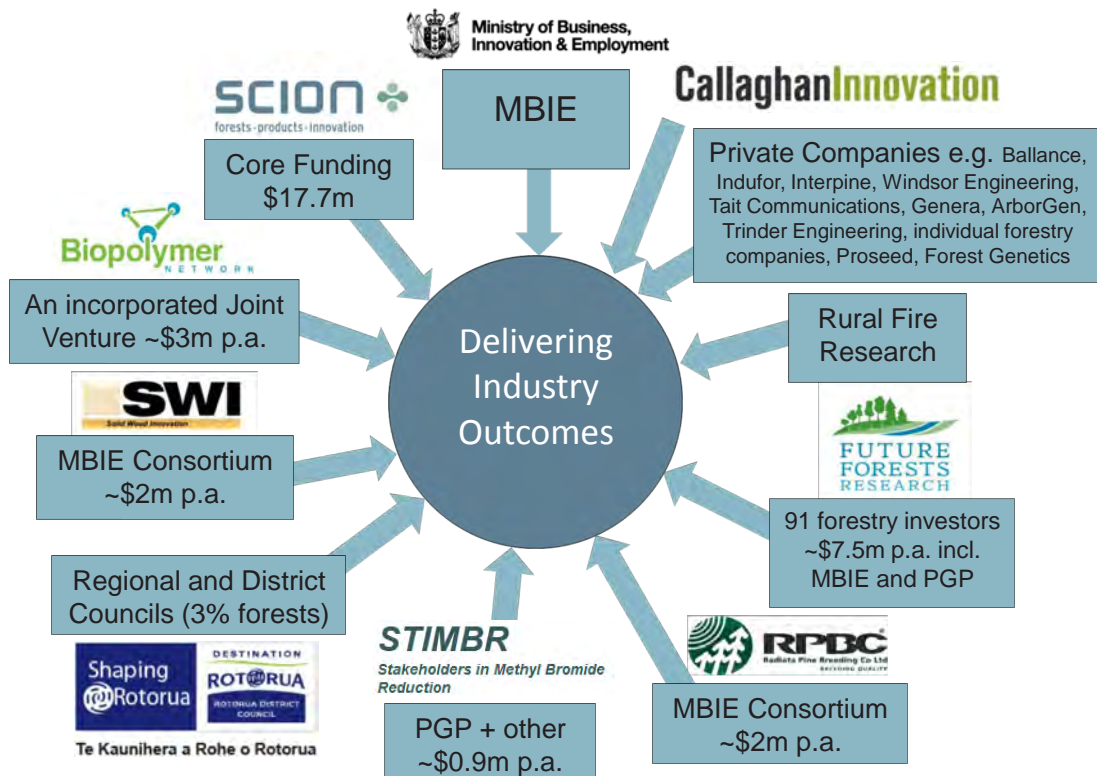


Figure 1: Collaborations through which Scion delivers outputs to achieve industry outcomes

Scion is closely involved in forming a 'forest industry centre of excellence'. As shown in Figure 2, this concept draws together Bay of Plenty tertiary education providers; Rotorua District Council, forest industry firms, and iwi with substantial interests in forests in the Central North Island. Scion will continue to work with investors, collaborating partners, Grow Rotorua Ltd and potential tenants to bring this to fruition.

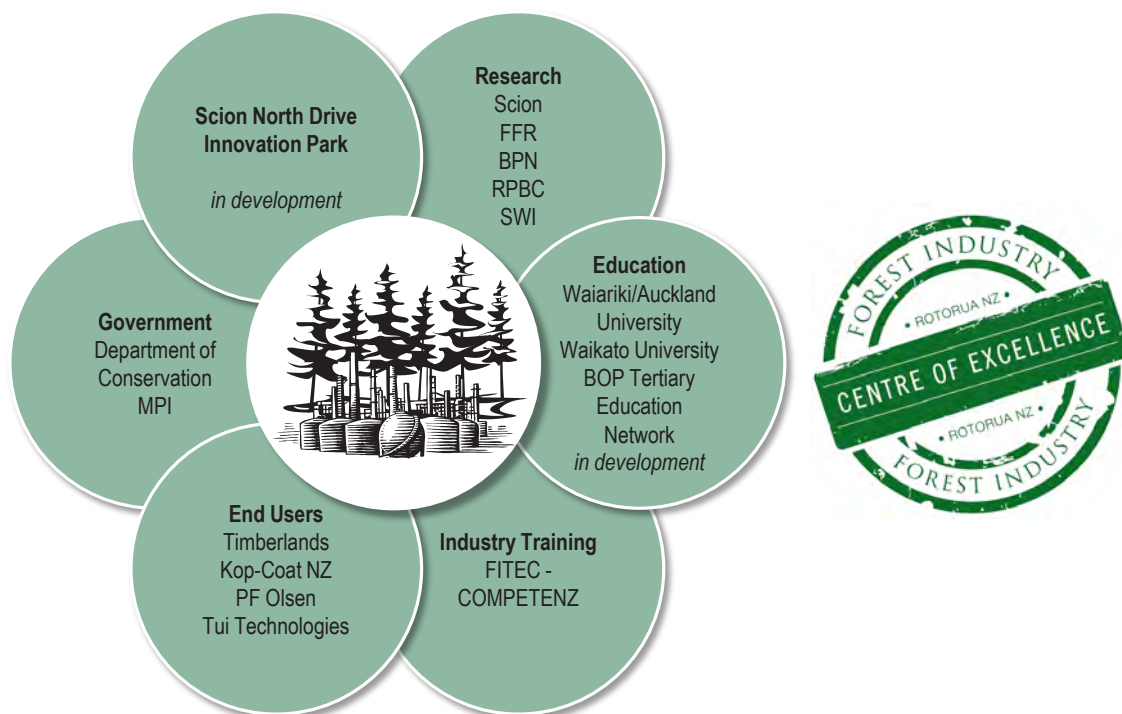


Figure 2: Forest industry centre of excellence parties and branding logo

IV. Work with Callaghan Innovation to increase innovation in manufacturing (Initiative 5 on the strategy map, page 5)

Scion, with about 40% of its research effort devoted to high value manufacturing, has proactively engaged with Callaghan Innovation from its inception. A 'charter' setting out the principles of engagement to support effective and productive links between Callaghan Innovation and Scion is in preparation. While Scion's primary focus is on enhancing the competitiveness of wood, wood fibre and biomaterials manufacturing and products from such materials (i.e. IO 2, 3, 5 and 6), we recognise the opportunity to work with Callaghan Innovation to introduce and translate technologies.

To build a productive relationship with Callaghan Innovation, Scion expects to put into effect the charter by:

1. Establishing joint projects where early positive impact can be achieved.

2. Accessing business and firm intelligence from Callaghan Innovation to support the commercialisation and translation of Scion technologies, and identify new customers and research collaborators.

V. Support Māori economic growth through forestry (Initiative 6 on the strategy map, page 5)

Māori are increasing their ownership of forests and forest lands in New Zealand. An estimated 1.2 million hectares of this is underutilised¹⁶. Their ability to realise economic value from such lands and forests is constrained by the parcels of land or forests they control typically being below economic critical mass, shortages of technical and governance expertise and insufficient working capital. They also want to undertake operations and develop products in a manner that respects Māori values, utilises Mātauranga Māori (traditional knowledge) and ensures environmental sustainability (kiatiakitanga).

¹⁶ PWC (2013) *Growing the productive base of Māori freehold land*, MPI, Wellington

Scion's Te Papu Tipu Māori Plan addresses these primary issues. Adopted in 2011, it comprises four primary elements:

- form partnerships with iwi/Māori entities with significant forest assets;
- strengthen relationships with investors and agencies aligned to growing the Māori economy (e.g. MBIE, MPI, Maori Trustee);
- enhance communication and technology translation with Māori; and
- develop Scion staff knowledge and proficiency in Māori tikanga and knowledge of te reo to support effective engagement with iwi.

The plan and progress in implementing it is assessed annually by Scion's strategic Māori Panel (Nga Rangatira ropu) and technical advisory group (Te Hangarau ropu). The first two years of the plan focussed on building Scion's internal capabilities, relationships with iwi with forest assets, and implementing research projects.

Scion's priorities to grow the Māori economy through forestry are:

1. Build partnerships (including with 'cooperating clusters') to support greater Māori participation in the forest industry economy);
2. Develop communication channels within Māoridom; and,
3. Customise technology translation to best meet Māori needs.

These initiatives align fully with *He Kai Kei Aku Ringa*¹⁷, the strategy developed by the Crown Māori Economic Growth Partnership.

VI. Workforce planning and pan CRI collaboration in talent management (This supports L&G1 on the strategy map, page 5)

Scion is closely engaged in the pan-CRI HR project to improve the attraction and retention of top talent. Three of the seven projects relate to retention practices: career pathways; talent and succession management; and coordination of cross-institute assessment of science capability. Scion's remuneration and rewards framework and career pathways are now consistent with its peers.

Findings from the pan-CRI project are being applied at Scion to:

1. Formalise workforce planning, such as through Scion's High Performance, High Potential (HPPH) programme.
2. Apply a common framework to evaluate capability and team performance at a sector level (e.g. water research and development) and thereby enable internal workforce planning to account for the capabilities of others.
3. Implement SnapHire (by September 2013) as a common CRI recruitment software platform to achieve efficiencies in recruitment from increased talent pools and information sharing.



Scion's international award-winning Orman Wing laboratories.

¹⁷ Māori Economic Development Panel (2012) *He kai kei aku ringa, Strategy to 2040*, The Crown-Māori Economic growth Partnership. Sourced at www.tpk.govt.nz/en/consultation/medp/strategy/

5. Allocation of Scion's core funding

Scion receives \$17.7 million from the Government to invest in science and innovation programmes that contribute towards the achievement of its Statement of Core Purpose National Outcomes. Allocations are updated annually using the procedures and criteria set out in Scion's 2012-17 SCI (pages 33 and 45). Scion's science Intermediate Outcomes (IOs, row 3 of the strategy map, page 5) and the performance framework for these are set out on pages 22-33 of the 2012-17 SCI.

Core funding by IO for 2013/14 (and 2012/13 for comparative purposes) is shown in Figure 3 (detail is provided in Appendix I). The chart summarises changes in investment both within and between IOs. Overall about 45% is invested in basic science with the proportion varying by IO according to the maturity of the field (e.g. commercial forestry (IO1) vs bioenergy (IO6)). In addition, where core funded research supports more than one IO (i.e. they are 'platform' in nature such as informatics and value chain optimisation), this has been mapped to the IO to which it is most strongly aligned.

In brief, changes to Scion's Core Funding are:

1. To increase investment in:

- ecosystem services to enhance public awareness of the opportunities in capturing value from the many non-wood benefits provided by forests ecosystem services;

- strengthen Scion's capability in biometrics and informatics; and,
- continue to grow capability in value chain optimisation.

2. To adjust emphasis in:

- bioplastics research in order to develop polyhydroxyalkanoates (PHA) from fermentation products;
- environmental impacts research to address industrial opportunities in upgrading wastes and support industry to achieve best practice in environmental performance;
- forest growing to grow radiata pine faster; reduce the impact of foliar diseases on forest productivity; expand the commercial scale and export potential of minor commercial species; and, demonstrate the sustainability of intensified forestry operations; and,
- bioenergy to adopt thermo-mechanical approaches to underpin industry aims.

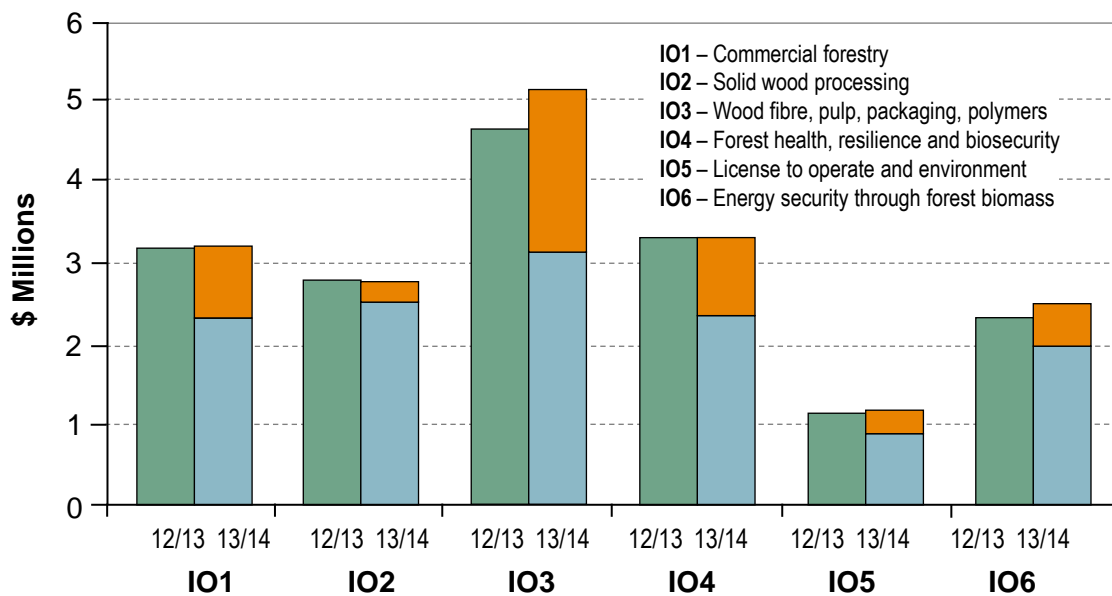


Figure 3: Allocation of core funding by IO by year. (Differences in bar height reflect shifts between IOs and the 'orange' portion of the bar shows the change in allocation within an IO.)

To sustain investment in:

- wood products research to support the development of high performance wood products from radiata pine and sustain capability in the durability of our dominant wood products;
- forestry and industrial biotechnology to enable the forestry industry to critically evaluate the opportunities provided by genetic engineering (GE); and,
- maintaining Scion's national collections - the Forest Herbarium, and the Insect and Fungal collections.

3. To decrease investment in:

- association genetics to increase the focus in genomics that will provide underpinning capability to support industry to achieve a step change in biomass productivity; and,

- biorefinery as early product development transitions to the commercialisation stage.

Sources of funding supporting each IO in 2013/14 are shown in Figure 4 (detail is provided in Appendix I). Relative to 2012/13 the main changes are:

- Increased commercial investment for forestry research.
- Growth in both commercial and MBIE (science contestable programmes) investment for the development of high value products from wood (IO2 and IO3) and other plant biomass (e.g. for polymers and plastics, IO3); for enhancing market access of New Zealand's forest products (IO4); and for renewable energy (IO6).

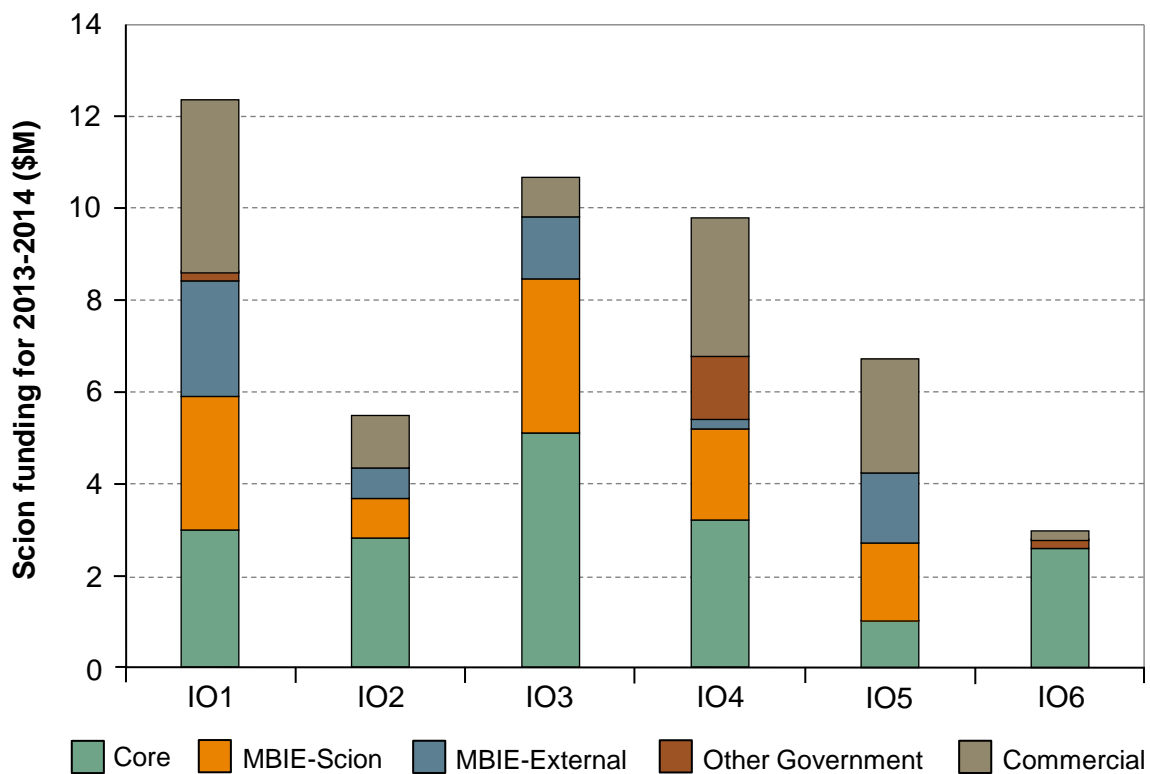


Figure 4: Investment sources, including core funding, supporting Scion's science and innovation intermediate outcomes (IOs)

6. Financial projections and reinvestment

I. Financial projections, cashflow and balance sheet

Scion's updated financial projections through to 2018 are summarised in Table 3. Financial performance indicators are described in Table 4. Associated consolidated cashflow and balance sheet details are presented in Tables 6 and 7.

Scion is forecasting to grow revenues by 5.6% to \$47.839 million and achieve an Operating Profit (EBIT) of \$2.171 million. This represents a 7.9% return on equity (RoE) before reinvestment. Reinvestment of \$1.075 million will generate a tailored RoE of 5.3%. Future revenues are projected to increase at 3.2% to 3.7% annually. The primary risks to achieving financial targets is a loss of MBIE investment next year and continued downward pressure on Crown and local government expenditure.

Table 3: Projected Statement of Financial Performance for the five years ending 30 June 2018

| | 30/06/2013 | 30/06/2014 | 30/06/2015 | 30/06/2016 | 30/06/2017 | 30/06/2018 |
|--|---------------|---------------|---------------|---------------|---------------|---------------|
| | \$000 | \$000 | \$000 | \$000 | \$000 | \$000 |
| Revenue | | | | | | |
| Crown | 22,656 | 28,416 | 30,526 | 31,136 | 31,759 | 32,394 |
| Commercial and other | 22,639 | 19,423 | 18,824 | 19,956 | 21,176 | 22,490 |
| Total Revenue | 45,295 | 47,839 | 49,349 | 51,092 | 52,935 | 54,884 |
| Operating Expenditure | | | | | | |
| Personnel | 24,736 | 26,034 | 26,685 | 27,539 | 28,448 | 29,415 |
| Other operating costs | 17,256 | 18,459 | 19,134 | 19,865 | 20,562 | 21,278 |
| Total Operating Expenditure | 41,992 | 44,493 | 45,818 | 47,404 | 49,010 | 50,693 |
| Scion Margin | 3,303 | 3,346 | 3,531 | 3,688 | 3,925 | 4,191 |
| Loss on disposal of fixed assets | -123 | 0 | 0 | 0 | 0 | 0 |
| Restructuring costs | -137 | -100 | -100 | -100 | -100 | -100 |
| EBIT-R* | 3,043 | 3,246 | 3,431 | 3,588 | 3,825 | 4,091 |
| Reinvestment | -1,019 | -1,075 | -1,100 | -1,100 | -1,100 | -1,100 |
| EBIT | 2,024 | 2,171 | 2,331 | 2,488 | 2,725 | 2,991 |
| Net interest income/(expense) | 74 | 47 | 43 | 30 | 39 | 53 |
| Profit before tax | 2,098 | 2,218 | 2,374 | 2,518 | 2,764 | 3,044 |
| Tax | -876 | -643 | -688 | -730 | -802 | -883 |
| Group Profit after Tax | 1,222 | 1,575 | 1,685 | 1,788 | 1,963 | 2,161 |
| Share of after tax profit from assoc. coys | 0 | 0 | 0 | 0 | 0 | 0 |
| Profit attributable to Shareholders | 1,222 | 1,575 | 1,685 | 1,788 | 1,963 | 2,161 |

*EBIT-R is EBIT before reinvestment

Table 4: Projected Financial Performance Indicators for the five years ended 30 June 2018

| | Forecast | Target | Target | Target | Target | Target |
|-----------------------------|----------|----------|----------|----------|----------|----------|
| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Efficiency: | | | | | | |
| Operating margin | 11.2% | 11.5% | 12.0% | 12.4% | 12.7% | 13.1% |
| Operating margin per FTE | \$16,830 | \$17,696 | \$19,149 | \$20,256 | \$21,421 | \$22,649 |
| Risk: | | | | | | |
| Quick ratio | 1.23:1 | 1.08:1 | 0.90:1 | 0.91:1 | 0.93:1 | 0.98:1 |
| Interest coverage | N/A | N/A | N/A | N/A | N/A | N/A |
| Operating margin volatility | 9.8% | 9.6% | 12.7% | 14.0% | 11.3% | 10.5% |
| Forecasting risk | (0.2)% | (1.7)% | 0.4% | 0.2% | (0.1)% | 0.0% |
| Growth/Investment: | | | | | | |
| Before reinvestment | 7.1% | 7.9% | 7.9% | 7.8% | 7.8% | 7.9% |
| Adjusted return on equity | 4.3% | 5.3% | 5.4% | 5.4% | 5.6% | 5.9% |
| Revenue growth | 3.4% | 5.6% | 3.2% | 3.5% | 3.6% | 3.7% |
| Capital renewal | 1.7x | 2.0x | 1.8x | 1.4x | 1.5x | 1.4x |

II. Reinvestment of surpluses

Scion's reinvestment portfolio underpins its strategy through Learning and Growth (L&G) initiatives (see page 5). Business investment cases for each L&G are reviewed by the Board as part of the annual refreshing of Scion's strategy and SCI, and preparation of the Annual Operating Plan.

In the first two years after the CRI Taskforce reforms, these incorporated significant 'internal facing' investment to support leadership development and culture change, the design and adoption of systems and processes to improve organisational productivity (the "Scion way"); catch-up on a backlog of building repairs and maintenance; and improving Scion's capability to engage effectively with Māori. Reinvestment in 2012/13 is forecast to total \$1.01 million.

From 2013/14, with the exception of smart systems and processes (L&G2), the internally oriented reinvestment will reduce and external facing initiatives will expand to:

1. Enhance the transfer technology/translation, including through our very successful industry secondment programme (L&G6).
2. Accelerate the commercialisation of Scion's technology pipeline (L&G4).
3. Support the use and re-use of data through a new 'Big data' initiative (L&G8).

Levels of investment in each L&G and the aggregate impact on RoE are shown in Table 5. Thus, Scion will continue to operate within the guidelines of the CRI Balance Sheet review and retain flexibility to reduce expenditure if revenue growth is less than planned.

Table 5: Summary of strategic learning and growth (L&G) initiatives 2014-18, underlying (target) ROE and tailored rate of return

| Reinvestment Project ('000) | 2014 | | 2015 | | 2016 | | 2017 | | 2018 | |
|--|------------|---------------------|------------|---------------------|------------|---------------------|----------|---------------------|----------|---------------------|
| | Capex | EBIT RoE | Capex | EBIT RoE | Capex | EBIT RoE | Capex | EBIT RoE | Capex | EBIT RoE |
| L&G 1 - Develop our people and culture | | 35 (0.1%) | 30 | 0.1% | | 0.0% | | 0.0% | | 0.0% |
| L&G 2 - Smart processes and systems | 0 | 416 (1.3%) | 230 | 173 (0.5%) | | 0.0% | | 0.0% | | 0.0% |
| L&G 3 - Workplace and facilities enhancements | 165 | 119 (0.4%) | 100 | 250 (0.8%) | 100 | 250 (0.7%) | | 0.0% | | 0.0% |
| L&G 4 - Business development & commercialisation | | 175 (0.6%) | | 0.0% | | 0.0% | | 0.0% | | 0.0% |
| L&G 5 - International collaboration (Core Funded) | | 0 0.0% | | 0.0% | | 0.0% | | 0.0% | | 0.0% |
| L&G 6 - Industry secondments and tech transfer | | 80 (0.3%) | | 0.0% | | 0.0% | | 0.0% | | 0.0% |
| L&G 7 - Growing the Maori economy through forestry | | 35 (0.1%) | | 0.0% | | 0.0% | | 0.0% | | 0.0% |
| L&G 8 - "Big data" | 175 | 215 (0.7%) | 175 | 250 (0.8%) | | 0.0% | | 0.0% | | 0.0% |
| Future initiatives - Opex | | 0.0% | 397 | 1.2% | 850 | 2.5% | 1100 | 3.1% | 1100 | 2.9% |
| - Capex | | 0.0% | | 0.0% | | 0.0% | | 0.0% | | 0.0% |
| Total Reinvestment | 340 | 1,075 (3.4%) | 505 | 1,100 (3.4%) | 100 | 1,100 (3.2%) | 0 | 1,100 (3.1%) | 0 | 1,100 (2.9%) |
| Tax | | -301 1.0% | | -308 0.9% | | -308 0.9% | | -308 0.8% | | -308 1.8% |
| Profit Impact of Reinvestment | | 774 (2.5%) | | 792 (2.4%) | | 792 (2.3%) | | 792 (2.2%) | | 792 (2.1%) |

III. Cash position, balance sheet structure and dividends

Scion is forecasting end-of-year cash balances in the range of \$0.7 to \$1.8 million over the five year planning period (Table 6). This is judged to be prudent given the almost 20% of revenue at risk in the 2013 MBIE investment round; the yet to be determined impact of national science challenges; and the capital renewal programme (forecast at between 1.4X and 2.0X depreciation for the next five years) which includes essential pilot plant for technology scale-up and evaluation. The combination of reinvestment of surpluses of \$1.0-1.1 million p.a. and capital renewal (\$4.0-5.5 million p.a.) means Scion net assets are forecast to grow by \$9.1 million to \$37.94 million over the planning period; with 90% of this being Shareholder funds (Table 7). Scion anticipates recommencing dividend payments when the current external operating environment stabilises and benefits from current investment initiatives are 'bedded' in. This position will be reviewed annually and on current projections is likely to be 2015/16.

Table 6: Projected Statement of Consolidated Cashflows for the five years ended 30 June 2018

| | 30/06/2013 | 30/06/2014 | 30/06/2015 | 30/06/2016 | 30/06/2017 | 30/06/2018 |
|--|---------------|---------------|---------------|---------------|---------------|---------------|
| | \$000 | \$000 | \$000 | \$000 | \$000 | \$000 |
| Cashflow from Operating Activities | | | | | | |
| Cash received from operations | | | | | | |
| Crown | 22,891 | 28,416 | 30,526 | 31,136 | 31,759 | 32,394 |
| Other clients | 22,768 | 19,632 | 18,715 | 19,845 | 21,063 | 22,375 |
| Interest | 95 | 53 | 43 | 30 | 39 | 53 |
| Total cash received from operations | 45,754 | 48,102 | 49,284 | 51,011 | 52,861 | 54,822 |
| Cash disbursed on operations | | | | | | |
| Personnel | 24,725 | 25,877 | 26,682 | 27,533 | 28,438 | 29,402 |
| Suppliers | 15,237 | 16,134 | 16,477 | 16,973 | 17,483 | 18,008 |
| Interest on debt | 23 | 0 | 0 | 0 | 0 | 0 |
| Taxation | 668 | 624 | 617 | 716 | 778 | 856 |
| Total Cash disbursed on operations | 40,653 | 42,634 | 43,776 | 45,222 | 46,699 | 48,266 |
| Projected Net Cashflows from Operations | 5,101 | 5,468 | 5,508 | 5,790 | 6,162 | 6,556 |
| Cashflow from Investment Activities | | | | | | |
| Sale of fixed assets | 1 | 0 | 0 | 0 | 0 | 0 |
| Purchase of fixed assets | -4,840 | -6,522 | -6,350 | -5,350 | -5,700 | -5,800 |
| Purchase of intangibles | -163 | -120 | -150 | -200 | -200 | -200 |
| Net Cash Received/(Disbursed) from Investing Activities | -5,002 | -6,642 | -6,500 | -5,550 | -5,900 | -6,000 |
| Cashflow from Financing Activities | | | | | | |
| Increase in term debt | 0 | 0 | 0 | 0 | 0 | 0 |
| Repayment of term debt | 0 | 0 | 0 | 0 | 0 | 0 |
| Capital Increase | 0 | 0 | 0 | 0 | 0 | 0 |
| Dividend paid | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Cash Disbursed on Financing Activities | 0 | 0 | 0 | 0 | 0 | 0 |
| Net Increase (decrease) in cash | 99 | -1,174 | -992 | 240 | 262 | 556 |
| Exchange rate effect | 0 | 0 | 0 | 0 | 0 | 0 |
| Opening cash balance | 2,810 | 2,909 | 1,735 | 743 | 983 | 1,245 |
| Closing Cash Balance | 2,909 | 1,735 | 743 | 983 | 1,245 | 1,801 |

Table 7: Projected Statement of Consolidated Balance Sheet for the five years ended 30 June 2018.

| | 30/06/2013 | 30/06/2014 | 30/06/2015 | 30/06/2016 | 30/06/2017 | 30/06/2018 |
|--|---------------|---------------|---------------|---------------|---------------|---------------|
| | \$000 | \$000 | \$000 | \$000 | \$000 | \$000 |
| Current Assets | | | | | | |
| Short term investments and cash | 2,909 | 1,735 | 743 | 983 | 1,245 | 1,801 |
| Debtors | 5,477 | 5,428 | 5,537 | 5,648 | 5,761 | 5,876 |
| Prepayments | 896 | 799 | 799 | 799 | 799 | 799 |
| Inventory | 250 | 250 | 250 | 250 | 250 | 250 |
| Total Current Assets | 9,532 | 8,212 | 7,329 | 7,680 | 8,055 | 8,726 |
| Less Current Liabilities | | | | | | |
| Creditors | 3,417 | 3,050 | 3,203 | 3,363 | 3,531 | 3,707 |
| Personnel liabilities | 3,237 | 3,435 | 3,538 | 3,644 | 3,753 | 3,866 |
| Income in advance | 2,030 | 2,192 | 2,192 | 2,192 | 2,192 | 2,192 |
| Provision for tax | 138 | 158 | 229 | 243 | 267 | 294 |
| Total Current Liabilities | 8,822 | 8,834 | 9,162 | 9,442 | 9,743 | 10,059 |
| Net Working Capital | 710 | -622 | -1,833 | -1,762 | -1,688 | -1,333 |
| Investments | | | | | | |
| Investments in subsidiaries & associates/Intangible assets | 208 | 208 | 208 | 208 | 208 | 208 |
| Intangible assets | 508 | 427 | 577 | 777 | 977 | 1,177 |
| Total Investments | 716 | 635 | 785 | 985 | 1,185 | 1,385 |
| Fixed Assets | | | | | | |
| Fixed assets | 30,870 | 33,917 | 36,663 | 38,181 | 39,870 | 41,476 |
| Biological assets | 622 | 622 | 622 | 622 | 622 | 622 |
| Total Fixed Assets | 31,492 | 34,539 | 37,285 | 38,803 | 40,492 | 42,098 |
| Long Term Assets | | | | | | |
| Deferred tax benefit | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Long Term Assets | 0 | 0 | 0 | 0 | 0 | 0 |
| Term Liabilities | | | | | | |
| Provision for staff liabilities | 1,909 | 1,969 | 1,969 | 1,969 | 1,969 | 1,969 |
| Deferred tax liability | 2,227 | 2,227 | 2,227 | 2,227 | 2,227 | 2,227 |
| Term debt | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Term Liabilities | 4,136 | 4,196 | 4,196 | 4,196 | 4,196 | 4,196 |
| Projected Total Net Assets | 28,782 | 30,357 | 32,042 | 33,830 | 35,793 | 37,954 |
| Represented by | | | | | | |
| Share capital | 17,516 | 17,516 | 17,516 | 17,516 | 17,516 | 17,516 |
| Capital increase | 0 | 0 | 0 | 0 | 0 | 0 |
| Retained earnings b'fwd | 9,990 | 11,212 | 12,787 | 14,472 | 16,260 | 18,223 |
| Revaluation reserve | 54 | 54 | 54 | 54 | 54 | 54 |
| Dividend | 0 | 0 | 0 | 0 | 0 | 0 |
| Current profit (loss) | 1,222 | 1,575 | 1,685 | 1,788 | 1,963 | 2,161 |
| Projected Closing Shareholders Funds | 28,782 | 30,357 | 32,042 | 33,830 | 35,793 | 37,954 |

7. Concluding comments

The forest industry has a big role to play in growing New Zealand's exports, achieving improved national environmental outcomes and supporting the vibrancy of rural regions. Export earnings from forest and wood products have grown strongly in recent years, especially from China. The recovery now well underway in housing starts (domestically and internationally) and the continued expansion of emerging markets for renewable materials, 'green' chemicals and bioenergy products will boost earnings further and directly support the Government's Business Growth Agenda goal of lifting the ratio of exports to gross domestic product to 40% by 2025¹⁸.

With New Zealand's log harvest growing by about 10 million m³ over the next decade to 33+ million m³, more attention must be paid to understanding and developing high margin export markets for radiata pine products. The WoodScape study¹⁹ confirmed the importance of increasing New Zealand wood processing competitiveness through initiatives in product innovation (e.g. to improve value recovery from residues), improve efficiency (such as lean manufacturing methods, new capital investment), market development and supply chain coordination.

Developing commercial scale and export returns from non-radiata forestry species is also important in meeting growing market demand for durable (non-treated) timber; realising the \$285 million potential revenues from New Zealand's privately owned indigenous forests²⁰ and in mitigating the exposure of New Zealand plantation forests to biosecurity and climate change risk.

Improving the competitiveness of forestry as a land use in order to increase replanting rates to about 20,000 hectares of new forest per year is also important for the industry's long-term viability and the attraction of new investors in wood processing. The 2020+ outlook for a global shortfall in softwood log supply; likely recovery of the carbon price post 2015; development of other markets for forest-based ecosystem services (such as biodiversity); and, the imperative to reduce nutrient pollution of waterways and estuaries are positive drivers for forestry as a land use. However, there are immediate opportunities, as set out in Scion's research plans for forest growing research to improve forestry returns through improved tree genetics and nutrition, matching genotypes to sites, and reducing impacts of foliar diseases. Through these means, yields of forests could be doubled over the next 20 years to 35 m³ per hectare per year while concurrently improving wood uniformity and stiffness²¹.

Māori have an increasing role in all of these areas of forest industry development. Therefore Scion plans to establish further partnerships with Māori trusts and incorporations with significant forest assets and large areas of under-utilised land with good potential for forestry²².

As outlined in this SCI, Scion is well positioned with forest industry stakeholders to achieve gains in all of these areas. Its refreshed science and innovation plan and core funding allocation are designed to exploit changes in the external operating environment and maximise opportunities for the forest industry through Callaghan Innovation and the national science challenges.

¹⁸ See www.mbie.govt.nz/what-we-do/business-growth-agenda/export-markets for detailed information about the Government's business growth agenda. Sourced 7 May 2013.

¹⁹ Woodscape (2013) *Summary Report: Overall outcomes, key messages and recommendations for next steps*. Scion's report to the NZ Wood Council (February 2013).

²⁰ KPMG (2013) *Indicative value analysis of New Zealand's privately owned indigenous forests*. Report to MPI (March 2013).

²¹ FAO (2012) *New Zealand forestry science and innovation plan*. Available from www.forestvoice.org.nz/docs/foaforestgrowingstrategy240112v15.pdf. Sourced 7 May 2013.

²² PWC (2013) *Growing the productive base of Māori freehold land*. Sourced 7 May 2013 at www.mpi.govt.nz/Default.aspx?TabId=126&id=1734.

8. Appendix: Core funding portfolio changes for 2013/14

Maximise the value and profitability of commercial forestry - IO1

Intermediate Outcome / Impact 1 (IO1):

Working closely with forestry companies, new investors in forests and companies involved along the forest-to-manufacturing supply chain, Scion will have:

By 2026, enabled the commercial forest estate to grow from its present 1.7 million hectares through increased land use competitiveness; a 50% increase in forest biomass productivity (Mean Annual Increment (MAI)) and at least \$70 million per annum reduction in operational costs (over 2010 values).

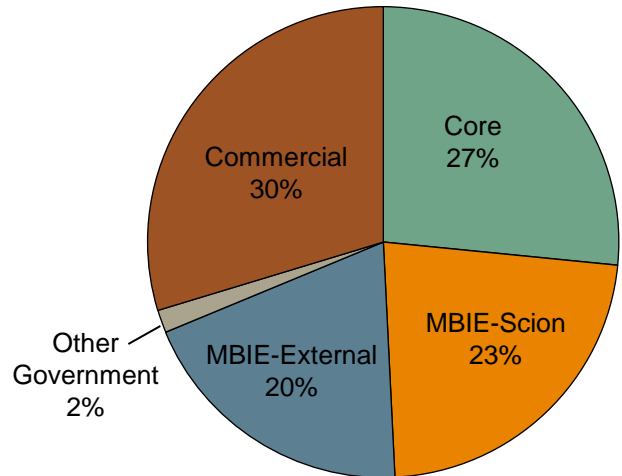
Changes to key supporting elements

Greater emphasis on improving productivity without compromising wood quality or site sustainability.

Changes to core funding

Changing focus from association genetics to genomics and gene sequencing of radiata pine to support focus on accelerated breeding to improve productivity.

Increased focus on supporting minor species to enhance their value as commercial species.



Total investment 2013-14: \$12.4 million

Distribution of investment: Core (\$3.0m), MBIE/Scion (\$2.9m), MBIE/External (\$2.5m), other government (\$0.2m) and commercial (\$3.8m)

Improve the competitiveness of the solid wood industry - IO2

Intermediate Outcome / Impact 2 (IO2):

Working closely with solid wood manufacturing companies, Scion will:

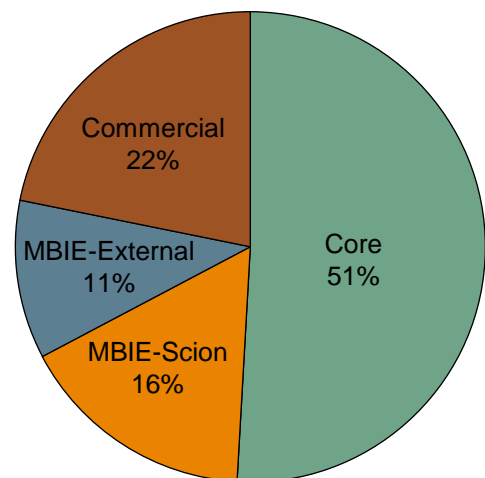
By 2026, have supported the industry in achieving 6% year-on-year growth in the export of wood products to an estimated target value of at least \$6 billion per annum.

Changes to key supporting elements

None

Changes to core funding

Focus is on developing new wood products based on prioritisation through industry-Scion developments in technical-economic analysis of product and processing options.



Total investment 2013-14: \$5.5 million

Distribution of investment: Core (\$2.8m), MBIE/Scion (\$0.9), MBIE/External (\$0.6m), other government (\$0) and commercial (\$1.2m)

Expand opportunities in the wood fibre, pulp, biopolymer, and biochemical industries - I03

Intermediate Outcome / Impact 3 (I03):

Working closely with pulp and paper companies, panel manufacturers, and current and emerging manufacturers using bio-based materials to create new products, Scion will:

By 2026, have supported existing and new industries to establish new bio-based manufacturing capacity for export and domestic markets worth at least \$1 billion per annum more than 2011 values.

Changes to key supporting elements

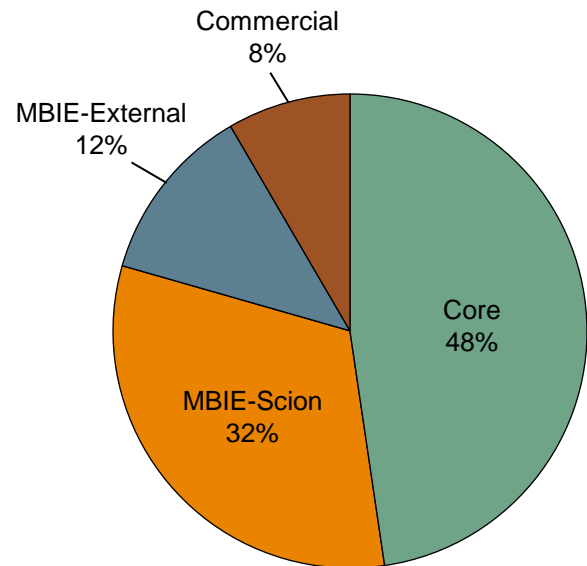
Support to Biopolymer Network Ltd in packaging development completed and one new product derived from lignin completed. Focussing on further products from lignin to support biorefinery developments.

Changes to core funding

Packaging work to focus on food contact issues as identified by industry.

Research on bioplastics development modified to increase focus on developing PHA through fermentation approaches.

Reducing emphasis on fibre segregation to focus on fibre modification.



Total investment 2013-14: \$10.7 million

Distribution of investment: Core (\$5.1m); MBIE/Scion (\$3.4m); MBIE/External (\$1.3m); other government (\$0); and commercial (\$0.9m).

Improve New Zealand's forest health and preparedness for biosecurity incursions, fire and climate change - I04

Intermediate Outcome / Impact 4 (I04):

Working closely with forest growing companies and key stakeholder groups, Scion will:

By 2026, ensure New Zealand forestry growing and wood products companies can meet their export revenue targets by minimising the risk of new pests (insects, pathogens, weeds) establishment in New Zealand and reducing the impact of establishing pests, fire and wind.

Changes to key supporting elements

Work with Better Border Security to further enhance pest surveillance and pest eradication.

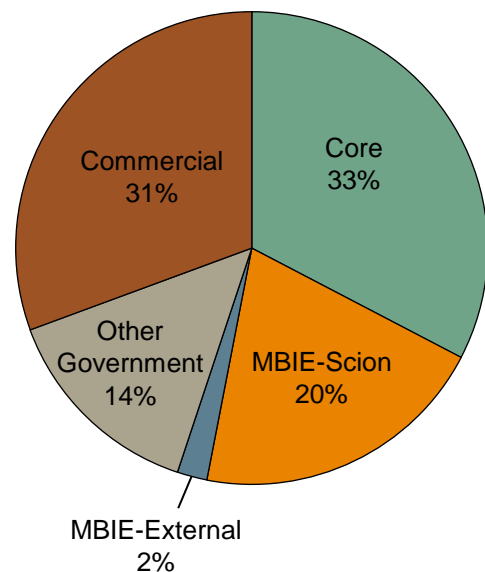
Increasing emphasis to reduce impact of pests on forests and forest product exports.

Changes to core funding

Increased investment into foliar diseases and germplasm resistance.

Increase focus on addressing wilding conifers.

Expand emphasis on health, increase focus on minor commercial species including indigenous forests.



Total investment 2013-14: \$9.8 million

Distribution of investment: Core (\$3.2m), MBIE/Scion (\$2m), MBIE/External (\$0.2m), other government (\$1.4m) and commercial (\$3m)

Ensure the New Zealand forest industry's licence to operate domestically and internationally and enhance environmental performance - IO5

Intermediate Outcome / Impact 5 (IO5):

Working closely with forest growers, wood manufacturers, bio-based product manufacturing and sales companies, and other key stakeholder groups, Scion will:

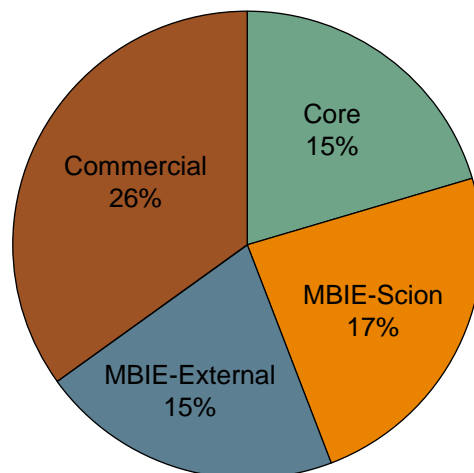
By 2026, enable the forest growing, wood-derived products and manufacturing companies to meet their export revenue growth targets through the application of tools, technologies and regulatory compliance frameworks that support New Zealand companies to meet domestic and international market criteria.

Changes to key supporting elements

Market access research on phytosanitary requirements now brought under a single focus in IO4.

Changes to core funding

Increased investment into forest ecosystem services. Re-focus on waste recovery platforms for pulp & paper processors.



Total investment 2013-14: \$6.7 million
Distribution of investment: Core (\$1.0m), MBIE/Scion (\$1.7m), MBIE/External (\$1.5m), other government (\$0m) and commercial (\$2.5m)

Increase New Zealand's energy security through the expanded utilisation of forest biomass for energy - IO6

Intermediate Outcome / Impact 6 (IO6):

Working closely with wood manufacturing industries, energy companies and new investors, and leading international developers of renewable energy technologies, Scion will:

By 2026, bioenergy's contribution to New Zealand's primary energy supply has increased to 9% (an increase of 24 PJ over 2010 values), including 350 million litres of liquid biofuels.

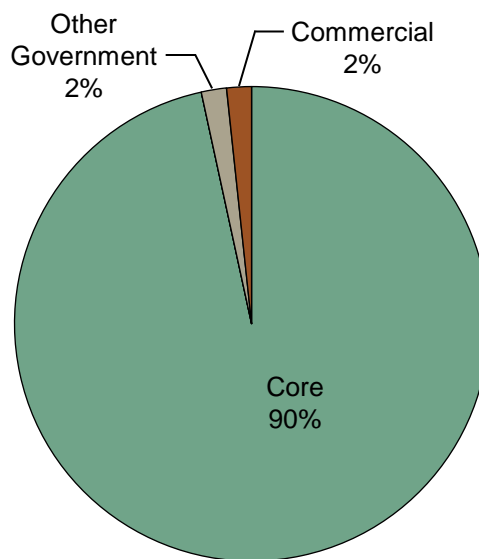
Changes to key supporting elements

Work on assessing options to use wood for energy sources using FP Innovations (Canada) methodologies has been completed.

Supported individual companies in reviewing energy production options also achieved one outcome and on-going.

Changes to core funding

Reduced emphasis on biochemical processes and increased investment into thermochemical process to produce energy from biomass.



Total investment in 2013-14: \$2.9 million
Distribution of investment: Core (\$2.6), MBIE/Scion (\$0m), MBIE/External (\$0), other government (\$0.15) and commercial (\$0.15m).



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