Towards a SINGLE VISION For the Australian Grains Industry

2005 - 2025

Input Suppliers

Producers

Grain Marketers

Handling & Shipping

Manufacturing

Wholesalers

Retailers

Consumers

Australian Government

Grains Research and Development Corporation

GRDC

Grains Research & Development Corporation

GRAINS COUNCIL OF AUSTRALIA

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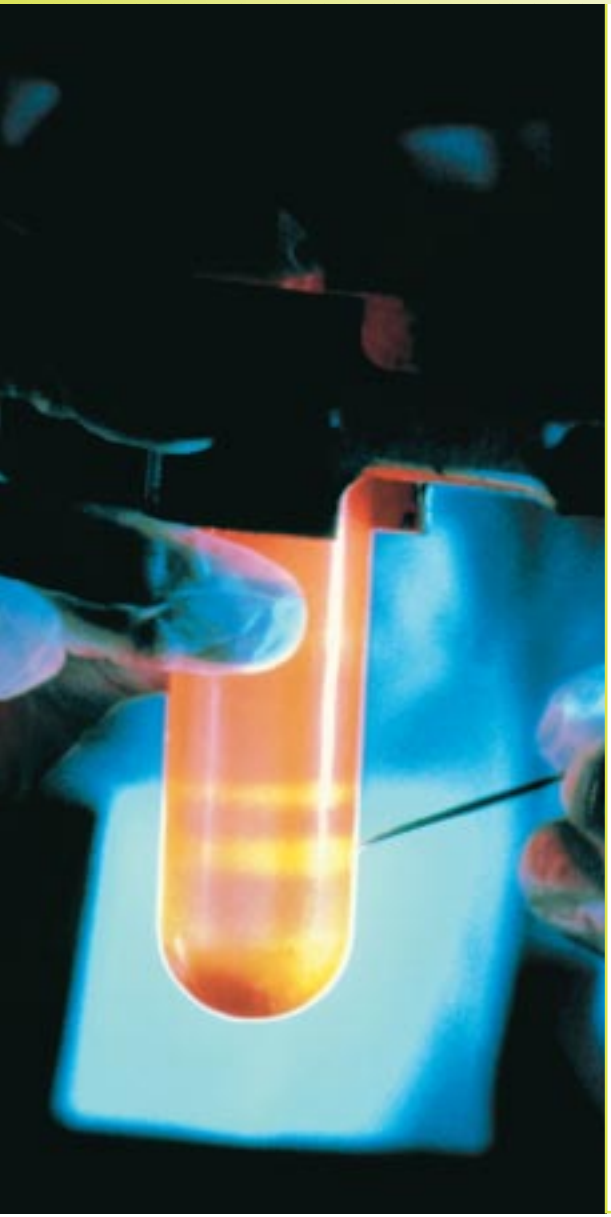

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Why make this journey?

In 2003 the Grains Council of Australia (GCA) invited input to a strategy for the grains industry for the years 2005 to 2025. It did so to give a strong sense of direction to grain growers and the industry for those two decades. These studies provide a road map to encourage greater accountability and provide growers with a sense of "ownership" of their industry and build community confidence in the prospects for industry growth.

Grains industry leaders met in early 2004 to consider a range of reports and documents prepared as part of this project. These highlighted the need for early attention to the formation of a Grains Business Forum, as a first step to get action on common industry issues including:

- research and development for business growth
- grower communication
- Iidustry infrastructure, and
- biotech and GMO issues.

The consultants for this (2004) Australian Grains Industry Strategy have worked with grains industry leaders from bodies including GRDC, GCA, AWB, ABB, GrainCorp, and CBH/GPPL. In addition, there was a much wider consultation with over 700 growers and industry interests including workshops conducted for GGA. Focused interviews were also undertaken with centres of foundation research, input suppliers to growers, grain marketers and handlers/shippers, primary and secondary manufacturers, and food/feed users.

As a result of these consultations the GRDC commissioned additional and targeted reports from grains industry specialists relating to: confirmation of projected demand, risk analysis, environmental constraints, grower communication, biotechnology and emerging grain uses, the overlap of industry organisations and the complexity of the various grains industry value chains.

The opportunities to capture the benefits arising from the potential shift over the next two decades, from a food/feed focus to new and emerging grain derivatives and grain-based specialised ingredients, have been evaluated.

This Australian Grains Industry Strategy 2005–2025 report aims to generate industry-wide consideration of the steps required to bring all stakeholders together for the sustainable prosperity of growers and the industry itself. The achievement of this objective builds on the goodwill, trust and high level of commitment identified in the reports. As well it allows the industry to build a sustainable future in the face of issues such as salinity, acidification, water management and climate variability.

The Grains Research & Development Corporation (GRDC) was pleased to support this project. The GRDC saw the strategy, in preparation for the industry forum at Grains Week 2004, as an investment in "Driving innovation for a profitable and environmentally sustainable Australian grains industry. This will be achieved by being a global leader; linking science, technology and innovation for the benefit of its stakeholders and the wider community."

We invite and welcome comments and responses to this initial movement towards a comprehensive Australian Grains Industry Strategy and acknowledge the contribution of all who have taken part in the development of this plan over the last year. We look forward to your continuing commitment to the Australian grains industry.

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Grains Council of Australia

Terry J Enright
Chairman
Grains Research & Development Corporation

2005-2025

Introduction – You are here

The ideas, issues and strategies presented in this document build on a series of strategic planning initiatives conducted by the Australian grains industry over 15 years. In 1989, the GCA initiated the Grains 2000 project, which identified a number of issues critical to the longer-term profitability and sustainability of the Australian grains industry. Jeff Arney, GCA President at the time of the 1997 strategic plan for the Australian grains industry, said:

> *"…the industry must continue to pursue the implementation of the identified and agreed strategies to ensure the profitability and sustainability of the Australian grains industry".*
>
> *– Jeff Arney*

The strategic plan launched by Mr Arney strongly advocated the Australian grains industry take control of its own destiny by identifying the future challenges and providing the strategies necessary to meet those challenges.

Grain growers across the country have indicated that they wish to become more engaged in the shaping and ownership of their future. Growers want to work with everyone dependent upon their capacity to meet an increasing demand for competitively priced, quality assured, differentiated and diversified grains, as well as grain technologies and emerging grain related service capabilities.

The above program provided the basis for the work in this project. This work considered the following issues:

- assessing opportunity, risk and threat gaps in relation to the environment
- current and potential gaps in relation to industry capability, and
- gaps in relation to shared vision, strategy, structures, stakeholder responsiveness, people, skills, customer service systems and responsiveness, leadership, management and the extent to which shared values support and/or fragment the industry.

A series of industry conferences, grower consultations and industry Strategic Planning Units have addressed elements of earlier ambitious agendas, setting strategic directions for the industry.

A high level of consensus exists about the need for both whole-of-farm approaches to grain production and whole-of-industry distribution and marketing. "Seeds of Change" have been identified in many of these consultations.

Two detailed strategic papers were presented at Grains Week in 2003, outlining research and options for the industry in areas of environmental concern, particularly the use of water in grain production, industry organisation and marketing. These papers again highlighted the industry's keenness to look at the issues in a strategic sense and to pursue options and opportunities for future growth.

In addition, in 2003, the Grain Growers Association conducted 22 briefings/workshops with growers throughout Australia to identify "Critical Issues for a profitable Australian grains industry" from the grower perspective. The result of this work was freely given as a contribution to this strategic planning project.

A wide range of people and organisations were interviewed in the research for this report including:

- grain growers from across Australia
- ABB and AWB
- bulk handlers
- chemical companies
- Chicago Grains Exchange
- CRC's and CSIRO
- Vice Chancellors' (Research)
- farm input providers – seed companies, fertilizer, machinery, technology
- food producers (local and global)
- grain pool operators
- GCA and GRDC
- investment bankers
- retail chains
- stockbrokers
- maltsters and millers
- pharmaceutical companies
- port authorities
- trading houses
- representatives of Government departments
- regulatory authorities and agencies, and
- multinational companies involved in R&D, purchasing, trading, handling, marketing.

In addition, a Gallup International database of 199,651 interview records from January 2000 – June 2003 has been analysed to establish the profile of farm owners and farm workers across Australia as an indication of cultural and inter-generational issues.

Actions, strategies, processes, accountabilities and pathways to prepare the industry to lead in its chosen markets, technologies, products and delivery systems were then developed and tested with a selection of key industry representatives to produce the final set of recommendations.

This plan addresses the areas called for in the terms of reference:

- the supply chain
- the demand chain
- the environmental issues facing the industry and how they will change for all grains, and
- structures appropriate for the industry in the above context.

The terms of reference also included key questions that were to be addressed under each of the headings.

In addition a series of specific issues previously identified by the GCA were to be addressed within the study.

The contributions from the industry, whilst substantial, identified major areas for additional research, required to provide a wider source of material for inclusion in this report.

A number of leading industry consultants provided input on:

- in-depth demand and supply analyses
- information flow issues
- environmental scan for a sustainable and prosperous grains industry by 2025
- entity mapping and linkages in the Australian grains industry
- grower demographics and population trends to 2020, and
- innovative uses for grain as food and feed.

These and many other documents are available for discussion at Grains Week 2004.

To focus the field of study effectively, and to identify and assess the factors and themes with the highest impact potential, the following areas were examined:

Area of study	Details of the issues examined
Capital infrastructure, industry value chains	Financial structures, futures/trading, Return on Investment (ROI), value chain of title, supply and demand value chains, prices and costs drivers, price setting mechanisms, market shaping behaviour/influences, value drivers as a combination of derived benefits, costs and risk.
Industry scale, scope and demographics	Demographics of supply and demand, stock flows, World Trade Organisation (WTO)/trade rules impacts, micro/macro economic factors/impacts, terms of trade with a special attention to farm consolidation, communities of interest and the risk of rapid decline in grower numbers.
Representative structures and industry architecture	Roles, leadership quality, skills, competencies, decision structures, community factors/impacts, governance and representation of grower and other stakeholder interests in grain value chains.
Environment and technical application	Responses to the rates of change, new or changing demand/alternative grain applications, productivity and quality enhancement, water dependency/impacts, requirements for internationally sustainable and commercially competitive grains industry development, choice drivers for current/emerging markets.
Industry risk analysis	Financial, levels, type, scale, process, demand; competitive, supply, systemic, technology access/failure, ecological risk, opportunity, cultural, environmental, incursion/terrorism, and community risk.
Intellectual property and intellectual capital applications to grains industry	Agribusiness as both Intellectual Property (IP) and Intellectual Capital (IC), source of wisdom and strategic opportunity, contracted flow of knowledge, Cooperative Research Centres (CRC's), 2010–2020 Research agenda, R&D value drivers, knowledge management structure, architecture, processes and store of value for growers in the future grains industry, product development and access.
Sustainability and diversity	Ecological systems, subsidies (visible/other), industry capability, installed base, trade barriers, access to critical farm inputs and key markets, R&D base, funding bases for breeding, segmentation and traceability capabilities required for an internationally competitive grain industry, trading systems/processes and decision structures.
Identification of the key issues facing the industry over the various time periods	These are presented in the analyses sections for each area of study, plus in the 'Conclusions and Recommendations' section, toward the end of this document.

The road ahead

This strategy is presented as the basis for an open dialogue on future directions for the development of the Australian grains industry between 2005 and 2025.

Identifying consensus between growers and other industry participants on the need for a "single vision" for the next two decades, the plan envisages a series of staged developments that will deliver an internationally competitive Australian grains industry (see Figure 1).

These stages are:

1. building a "burning" platform for leadership
2. consolidating grower representation and other industry associations
3. developing industry-wide policies and initiatives for sustainable prosperity.
4. identifying emerging sources of demand
5. establishing international strategic alliances for supply and R&D relationships
6. integrating the demand, supply and other value chains
7. building a communications infrastructure to confirm market expectations (technological and regional)
8. offering opportunities for investment and grower equity in emerging markets, and
9. extending grower investment in off-shore production and equity in international supply chain management.

The earlier of these paths are to be achieved in order to realise the opportunities that emerge into the future timeframes.

Only when the first three or four of these paths are addressed and satisfied can the balance of the opportunities for the industry be developed and realised.

The global and local grains industries are moving – or already have – from their government bases to those of the market, from a market economy to a global, corporate economy.

Themes emerging from the research in this project (from growers and other industry value chain participants) are identified in Table 1.

***Figure 1:* Pathway to the future**

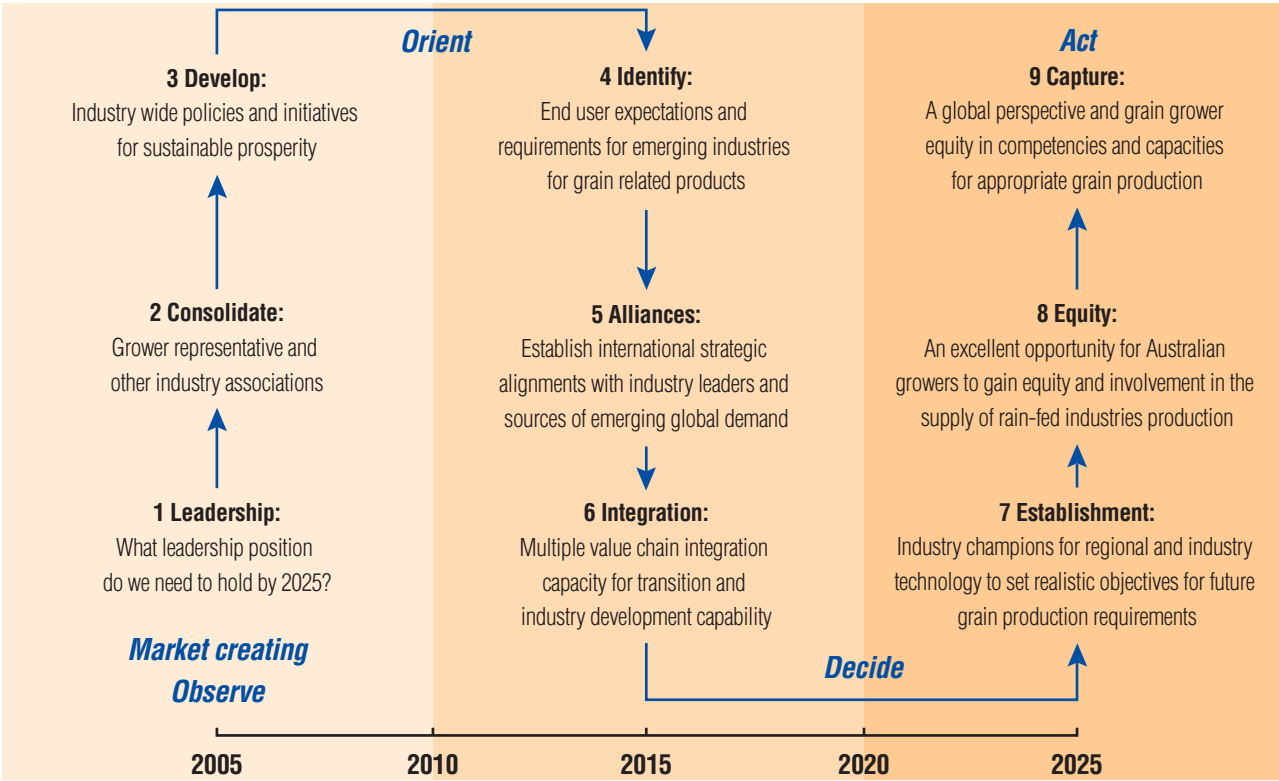


Table 1: Key themes emerging from interviews and 2003 Search Conference

Theme	Issues
Representative structures and industry architecture (Highest priority)	Lack of effective knowledge management and communication Currently the industry's goals, roles, structures are fragmented, and An urgent need exists for the provision of an effective industry forum for dialogue along the five value chains (demand, supply, title, knowledge and communication, community) with effective prioritisation processes and trade-off analysis for industry priorities and the allocation of discretionary knowledge and physical resources. This would allow, for example, the industry to be responsive to changes in demand in a more timely manner.
Capital infrastructure, industry value chains	Supply Chain: • grower/farm sustainability, profitability, demographics, knowledge and resource access • handling of variety and segmentation procedures as a mechanism for enhancing return to growers • added value to grower through links throughout the value change to end user, and • varieties, trade-offs and industry response to give farm viability and sustainability. Demand: • identification of new market opportunities, risk and trade-offs • understanding of demand, choice, grain types and production requirements • what are the emerging sources of demand • demand for specialised labour, professional advice services and technical support as part of farm viability and sustainability • identification of livestock feed requirements and meat conversion rates, and • market intelligence on trends in taste and cultural drivers of food preference – and how they will impact on the grain product requirements of food manufacturers. Marketing: • more direct access required to consumer/producer market signals, and • capital structure and trade-off analysis.
Industry scale, scope and demographics	Improvements in efficiencies and effectiveness are occurring in the supply chain, and Regionalisation and consolidation to match these efficiencies will occur at the same time.

Table 1: ***Key themes emerging from interviews and 2003 Search Conference*** *(continued)*

Theme	Issues
Environment and technical application	Bio-environment – potential and risks, and Sustainability in terms of new technologies and benchmark studies.
Industry risk analysis	Market intelligence and market risk analysis, and Identification and communication of opportunity and risk analysis, and development of risk management strategies.
Intellectual property (IP) and intellectual capital (IC) applications to grains industry	Intellectual capital and IP scope, scale, relevance, sustainability and structure Knowledge and capital for new markets Market risks assessment and management Access to traceability technology Opportunities for growers to change to match new and emerging market and supply options IC-driven knowledge and management requirements for market intelligence, landscape risk identification, land management, and IC-driven trade-off analysis and modelling.
Sustainability and diversity	Sustainability of rural communities Human capital Critical mass of human and related intellectual capital requirements Trade-off analysis and modelling of alternative uses of land and lower rain regions What is the appropriate use and pricing of water in irrigated areas? and Landscape and land capabilities issues, possibly restricting growers' choices in land management.

Other interviews conducted with growers across Australia by Storey Marketing through 2003 identified similar themes as shown in Table 2.

Table 2: Main issues identified from grower workshops

Issue or Theme	Key Comments
Reduce fragmentation in industry	Desire to see a whole-of-chain industry body to address fragmentation and redefine roles; and provide protection from over-regulation.
Grower access to market information	Information is often unclear and filtered Lack of trust is restricting access to demand chain and market information, and Allow optimisation of outcomes for all growers and the need for more producer/consumer signals to drive the R&D agenda.
Supply chain infrastructure	Improve efficiency and costs through competition and choice in the storage, handling, transport and ports Reverse under-investment in road and rail infrastructure, and Desire to see whole of chain efficiencies improve grower and industry returns.
Wide support for orderly marketing approach	Growers offer continued support for use of orderly marketing arrangements for risk minimisation in markets. However, they desire less rigid control, more flexibility for innovators, competition and a clear, unambiguous focus on export market customers.
Human capital	Growers see the future of the industry crucially dependent on attraction of new, talented leadership, to ensure viable rural communities Need for development of more professional farm and related support industry managers and staff, and Linkages developed with the education sector to ensure supply of new professionals in grains research, advisory and farming operations.
Support for 'Triple Bottom Line' focus	Agreement on need for economic, environmental and social sustainability throughout the industry. However, some fear of loss of objectivity and autonomy for growers with a regulatory approach, and Relative comfort with need for Quality Assurance (QA) and identity preservation programs and needs, however, a simple and single system is preferred.
Wide support for GRDC and research investment	Recognise need for investments in plant breeding and other grain research, plus grower involvement in panels, and Some concerns about the perception of buying the result from some of this investment with Plant Breeders Rights (PBR) and End Point Royalties (EPR).
Need for early resolution of GMO and ethanol issues	National policy determining either opportunity or threat from GMO's, and clarity in potential for grain use in ethanol production and economic characterisation of this use.

Sustainable strategic positioning options

Figure 2 shows Australia's current strategic positioning from a broad customer perspective and a potential one that would achieve sustainable leadership in chosen markets.

Customers will easily move from a high benefits/high cost position to one of "low benefits/low cost" on or above the line of equal value (shown running from bottom left to top right in).

If Australia remains in its current position, it will encourage discounting competitors – like the Ukraine or South America – to enter our markets, build scale and effectively compete through undercutting our current position.

The three sustainable domains for competitiveness are:

- high benefit/competitive cost cell (economies of scope in niche markets),
- competitive benefit/lower cost cell (economies of scale in niche markets), and
- market leader position – lowest cost/highest benefit cell (economies of both scope and scale).

Australia does not have the global scale and scope to compete effectively in the market leader position from within Australia.

Western Australia and South Australia have potential – based on their current supply infrastructure, location, market access and capabilities – to compete in the competitive benefits/lower cost cell.

Victoria, NSW and Southern Queensland have the market access, location, capabilities, infrastructure (subject to planned infrastructure up-grades) to compete in the high benefit/competitive cost cell.

Tasmania, Central Queensland and Eastern Victoria may compete in the high benefits/competitive cost cell.

This would not preclude growers in other regions from competing in any of the sustainable niche cells.

A market leader position for Australian grain could be achieved if scale and scope were increased through off-shore production for target markets where there is a natural location advantage for 'Australian owned but not Australian located' supply.

This could be achieved either directly or through supply alliances/agreements based on Australia supplying the intellectual capital, brand, quality and efficiency management.

It is important to note that over time, as a result of competition, technology, process and market development, benefits to the customer tend to increase and costs of access/prices to customer decrease, as has occurred in the Australian dairy industry.

The global rationalisation of the demand/supply chain is already impacting on the dairy and sugar industries.

This implies that for the industry to achieve sustainability the actions outlined in Table 3 would need to be achieved.

If Australia remains in its current position, it will encourage discounting competitors.

Figure 2: Sustainable positioning of the Australian grains industry

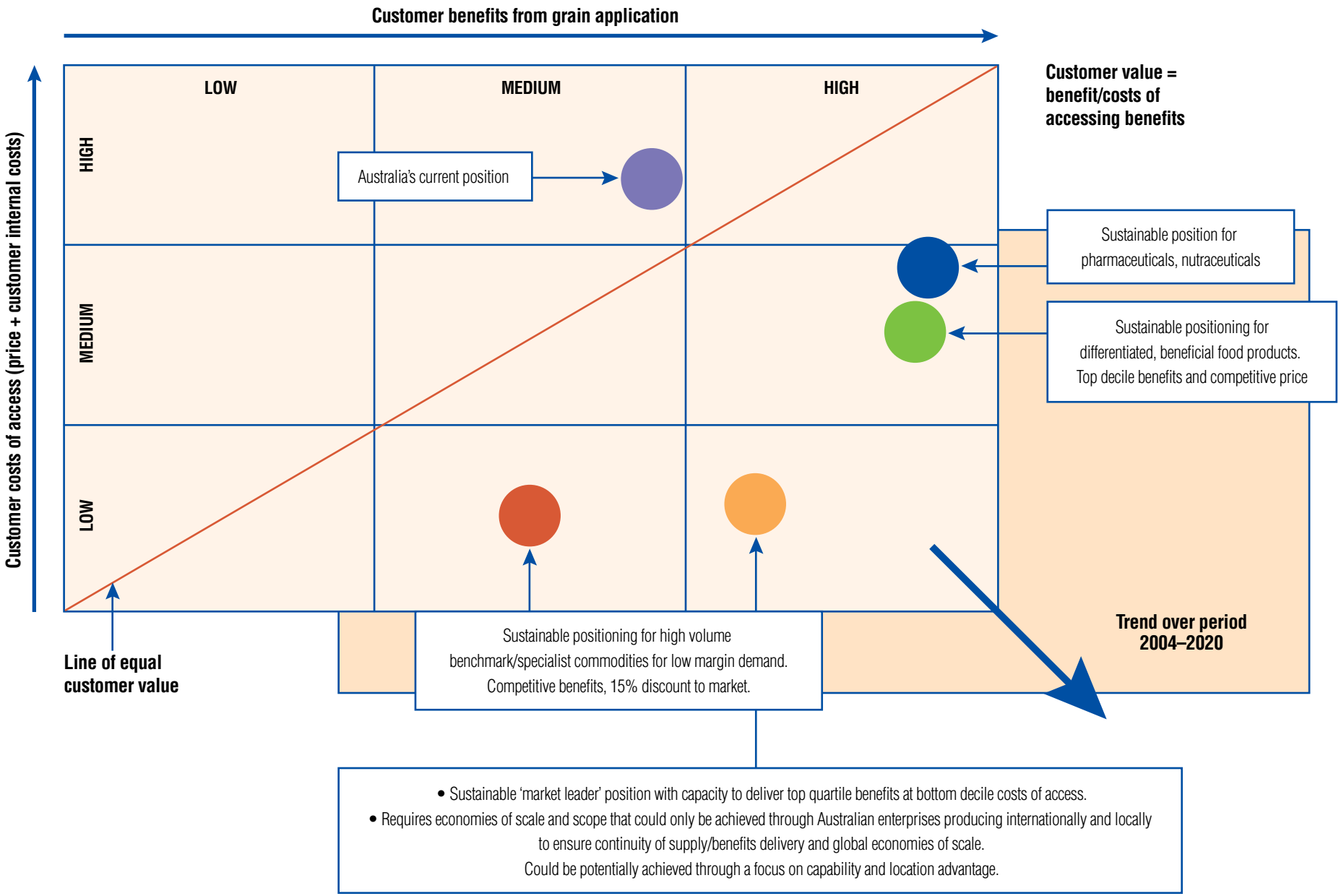
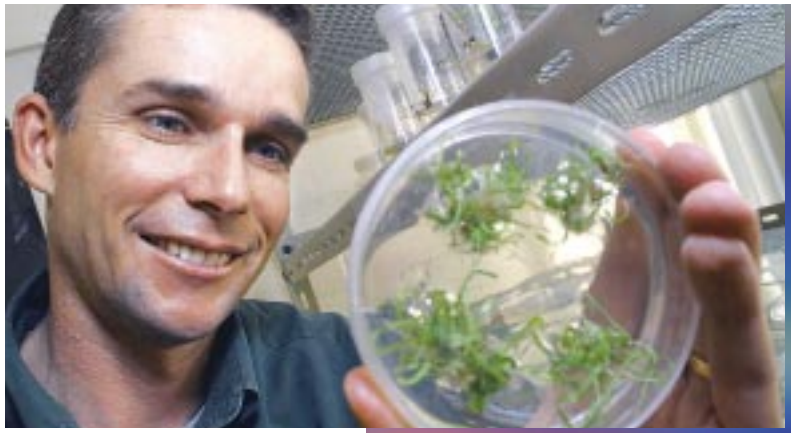


***Table 3:** Re-position key parts of the industry for sustainable leadership within the appropriate cells*

Strategic position	Characteristics/needs
For the low access costs and competitive benefits cell	Industry suppliers would have to focus on reducing unit supply costs throughout the value chain by at least 30–40 percent compared with current levels while retaining or improving benefits delivery through, for example, traceability and quality assurance (QA). These suppliers would have to sustain internationally competitive benefits delivery through superior supply chain process and cost management, competitive customer relationships and delivery processes to their selected niche customers.
For the competitive costs, higher benefits cell	Industry suppliers would have to focus on superior customer relationships, anticipating their new and emerging benefits/needs while providing higher flexibility, adaptiveness and responsiveness to their current and changing requirements and expectations. Benefit delivery has to be specified in customer terms/requirements and customers must perceive that they receive at least 15 percent higher benefits at competitive costs of access. This implies an improvement of approximately 25 percent on Australia's overall current positioning.
For the higher benefits, lower cost leadership cell	Australian-based industry suppliers would have the capability (scale, scope, technology) and will to selectively service both of the above niche combinations and have the industry scale to drive costs to the lowest quartile or less in the broad core market base of their chosen markets. This is seen as a genuine longer-term option through the early investment in foundation and transition research applications in key markets, technologies, products and processes and a strong focus on deployment of these base strengths into commercial applications faster than competitors.

Challenge and opportunity: the future is in the industry's hands.



Demand analysis – who wants us?

The fundamentals of short-term grain demand are unlikely to alter substantially between 2003 and 2007–2008, due to the current lifespan of agricultural agreements and trade policies.

That is not to say that demand will not change, but rather that the fundamental drivers of it are unlikely to, as the major alternative demands for grain are unlikely to have any major impact over that time.

However, many issues need to be considered when looking at potential demand going forward.

Potential demand outstrips supply

The core areas in demand are export markets and emerging new grain uses.

One of the problems with the demand assumptions made by most is the inbuilt one that if X amount of grain is available (in Australia, for example) X amount is available for a particular use. This approach assumes, for instance, that the entire grain production of Australia theoretically could be available for stockfeed or for biofuels.

So, before considerations are given to WHAT grain is grown, we must first consider the market demand for grain as a total – which is where the problems and opportunities exist.

Looking out to a 2025 horizon, it is generally believed that specifics of the crop grown could be adjusted according to demand, within the parameters of agronomics and sustainability.

Food uses

There is a difference between required demand (i.e. for food) and potential demand that includes emerging uses of grain and grain substitution. Most theorists predict the amount of grain required for food will not increase substantially because there are seen to be three drivers of demand at a basic food level:

- population growth is slowing
- more of the world's population already has fairly high levels of per capita consumption, beyond which the scope for further increases is fairly limited, and
- the assumption that people who do not have enough food to eat are unable to afford more (and so increase demand) or do not have the resources and other means to produce it themselves.

Within the context of a population growth of around 1.1 percent per annum to 2025, the cumulative effects of these factors is an assumed stagnant per capita demand for grain for direct food use (not including its input into meat).

The fundamental strategic issue for the Australian grains industry is not only to identify the particular quantities of demand for each grain, but also the transformations from the existing food and feed value chains to the emerging alternate value chains for new uses of grain and grain-based specialised ingredients.

Information is also needed on the likely changes in the economic community and knowledge management value chains that underpin the demand/supply chains.

Feed grains

Projected export growth rates for meat and livestock in Australia have assumed an unconstrained supply of feed grain. Whilst short-term (to 2005) there will be little real growth in meat exports due to recovery from poor performance in 2000–2002, between 2005–2007 strong growth is predicted.

Emerging and new uses

Current use of grain to create lubricants, starch and similar products for the pharmaceutical and oil industries represents around 6 percent of total production.

However, there are plans to increase the use of Australian grain, within Australia, for pre-processing of these products for the global market by the multinationals already present in this country. Being closer to a core supply source, the argument is that they source a greater proportion of their international needs from Australia and export as pre-processed goods. This would create demand for a further 4 million tonnes by 2020.

Malting barley

Demand for malting barley is forecast to be reasonably stagnant, even declining, if only Australian consumption is considered. Brewers indicated plans to centralise buying of malting barley in Australia with the aim of pre-processing the grain prior export. If this occurs a potential exists to increase barley demand in 2008 by close to 1 million tonnes.

On-shore processing

The strategic plans of multinational corporations could see a reasonably large proportion of Australian grain normally exported being centrally purchased in this country and pre-processed prior to export.

This obviously has a strong economic benefit to Australia but it also would impact on the physical grain being exported from the country.

The vast majority of plans identified have implicit centralised purchasing prior to 2005 but no centralised pre-processing until post-2005. Most manufacturers cited the assumption of total or partial deregulation in 2005.

Further, the strong global demand for grain and grain products will create an opportunity for Australia to choose which demands it will meet – which markets it wants to supply.

Traceability and segregation

A significant opportunity for the Australian grains industry is the development of Environmental Management Systems (EMS) Accreditation, which could offer ten years access to markets requiring proof that grain is produced in acceptable ways.

Discussions with food and beverage manufacturers, pharmaceutical manufacturers and those exploring the issues of agriceuticals, yielded a mandatory requirement for Australia to tackle the issues of traceability and segregation.

While manufacturers so far have accepted a commodity grain approach, they are facing increased pressure from the insurance industry and from consumers to ensure full traceability of their inputs.

Traceability requires within it segregation of grain, Quality Assurance (QA) and Identity Preservation.

Multinationals said that one of their main reasons for purchasing from Canada and Europe is the availability of QA systems, traceability and segregation, not the actual grain quality. They will pay a premium for these features – one that would be available to Australia.

Further, they stated that, as their processes become more automated and more specialised, the requirement for consistency and specification accuracy in the grain they receive will become paramount.

The current Australian practice of “averaging” is progressively causing problems and increasing costs at manufacture.

In some cases, such as the malting industry, averaging can result in an entire batch being rejected and the food processing industry suggested rejection could become more common.

Benchmark grains

Again, across the food processing, pharmaceuticals and beverage industries, there was consensus that individual grain types and varieties need to be tested and certified within their production process.

The proliferation of varieties is seen as good from the perspective of giving the potential for optimisation but negative from the perspective of the cost of certification if supply of the variety is not assured. They cited the opportunity for Australia to expand its benchmark grains and to create a market around expansion of the use of these benchmark grains – not only in Australia but globally.

This would allow manufacturers to certify a particular grain, ensure supply, hedge against poor crops in specific regions – and pay a premium for that benchmark grain because of the cost savings provided.

Genetically Modified (GM) crops

Grains industry leaders recognise the need for wider consultation on the potential of biotechnology and GM developments to expand demand for Australian grain as benefits become available to both growers and consumers.

It was interesting to note the number of long (10–15 year) contracts being negotiated by the multinational food, beverage and pharmaceuticals manufacturers in Australia for 2005 onward. These can require the absence of GM as well as insisting on the presence of traceability and segregation as a contract condition.

Strategic considerations for demand: 2005–2025

Before 2020, Australian grain producers are likely to be tempted to make only minor adaptations to the production processes of the grain industry in the face of increasing demand. The larger challenge, however, will be to identify and supply the maximum potential for international demand for Australian grain production and grain technologies.

Considerable opportunities will exist for the development of a demand focused grains industry where demand chains will become increasingly specialised and functional with some 40–50 primary uses of wheat and wheat fractions, hundreds of uses of pulses and oilseeds and unspecified emerging opportunities in bio-pharmaceutical, nutraceuticals, and functional grain usage.

It is important to note that apart from demand for pharmaceuticals, nutraceuticals and beneficial foods, the broader volume demand increases will be for lower base cost grain supply than currently applies in the primary human food areas.

The big concern is that while world grain supplies are likely to be adequate to meet food needs to 2020, the export opportunities and other pulls on the grain pool towards fuel production, agriceuticals, bio-products and industrial ingredients can lead to a potential demand for Australian grain in the range of 5–6 times the current supply by 2025.

A summary of the demand position is outlined in Charts 1–11. These show projected demand scenarios for grain in existing markets/uses, and potential emerging uses in both the domestic and export markets. These charts demonstrate a potential maximum growth in demand out to 2025 of up to 500 percent of current production.

Even if this increase in demand is overstating the situation, and is beyond Australia's domestic production capacity, the opportunity exists for Australian growers to explore alternative methods of supply.

Australian population growth to 2025 will require up to 4 million tonnes of food grain.

Demand (domestic) for grain for stockfeed to 2025 is likely to be in the range of 8–10 million tonnes.

Total domestic demand for grain – for food, stockfeed and non-food uses – is estimated to grow from around

- 14 million tonnes of cereals
- 1 million tonnes of pulses
- 1.5 million tonnes of oilseeds at present

to between

- 30–40 million tonnes of cereals
- 1–2 million tonnes of pulses, and
- 1–2 million tonnes of oilseeds in 2025.

Predictions of export demand, assuming 25 percent of previously exported grain will be used locally for domestic ingredients including stockfeed, ranges from a potential of between 60 million and 70 million tonnes of cereals by 2025.

An additional 6 million and 7 million tonnes of pulses and around 6 million tonnes of oilseeds will be required.

This assumes that Australia's exports will grow at the same rate as the gap between global demand and supply expands.

The three drivers of international demand at a basic food level will be:

- the level of population growth in the Asia Pacific Region
- changing patterns of per capita food consumption with rising levels of income, and
- changes in food production technology that can increase nutritional yield while responding to factors of taste, relative cost and preference.

The ability to meet demand for grain production in Australia will be a direct function of yield, farm systems efficiencies and the capacity to manage grain uses, costs and prices.

Other factors include the impacts of import volumes, quality and price that may result from bilateral trade agreements especially those with the United States of America.

Table 4: Total demand for Australian grain: domestic + export ('000 tonnes)

	2000	2005	2010	2015	2020+
1. Existing uses as at 2004:					
• Cereals	36337	40962	46160	51800	58130
• Pulses	4370	4980	4275	4812	5419
• Oilseeds	5185	4103	4537	4992	5493
2. Emerging uses (unconstrained):					
• Cereals	0	501	5531	74786	120693
• Pulses	0	53	878	4334	11148
• Oilseeds	0	872	4030	9253	17398

The industry can expect to see continuing removal of global trade barriers and probably a continuing real decline in the overall grain price.

It must be in a position to meet demand for benchmark grades, contract specific purchase arrangements for long-term supply and develop environmentally sustainable supply arrangements over the next two decades.

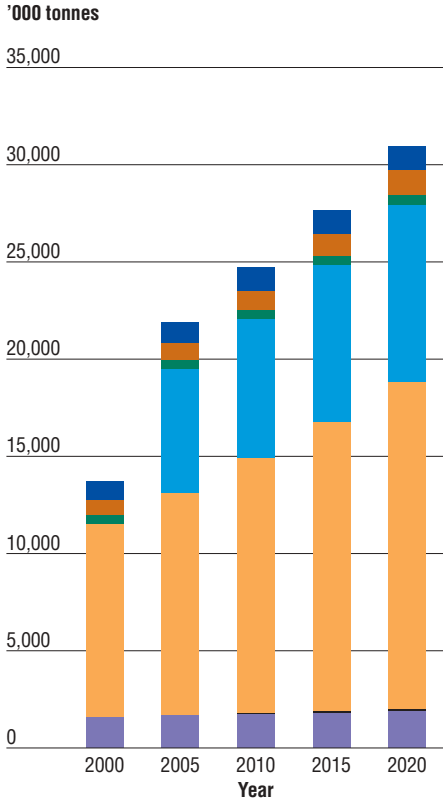
Shorter and more consolidated demand driven supply chains are developing around the world. This is driving an increase in supply contracts that specify longer contract periods that demand traceability, segregation and quality assurance provisions (to ensure security and sustainability of supply), while achieving higher returns in unit cost and total resource management.

There will be a significant need for greater transparency and access to market intelligence in all grain categories and through all production stages.

This will ensure price signal transparency and as a consequence effect lead times in the transfer from foundation science (eg breeding) through to production, as a greater focus will be on demand responsive behaviour from and to grain growers at local, state, regional and international levels.

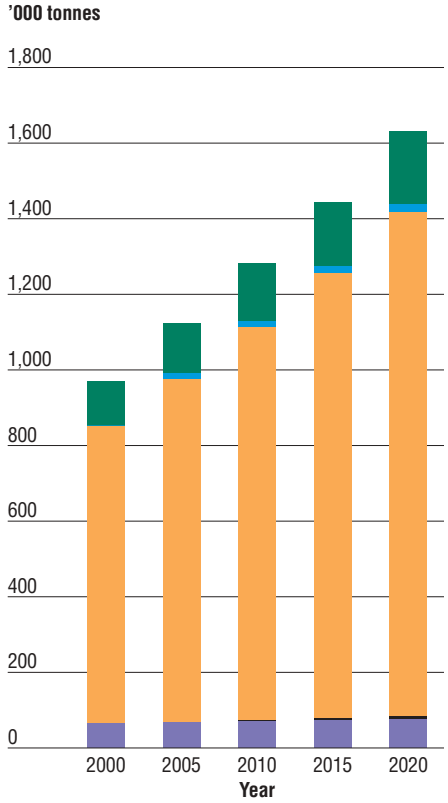
Assuming the existing international trade and tariff protection constraints continue, the central focus of the Australian Grains Industry Strategy 2005–2025 should be the development of a 'global leadership position' for the Australian grains industry in both current grain production capability and emerging grains industry applications.

Chart 1: Change in domestic demand for cereals 2000–2020



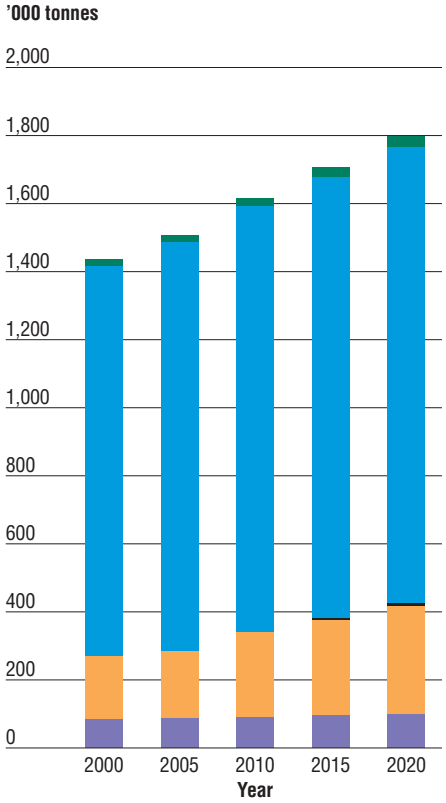
	2000	2005	2010	2015	2020
Other	988	1,058	1,189	1,235	1,277
Seed uses	773	872	983	1,103	1,237
Processing	436	457	476	495	560
Local purchase by multinationals		6,361	7,156	8,051	9,057
Stockfeed	9,939	11,469	13,114	14,878	16,830
Diet change (meat – grains)			42	87	137
Food	1,584	1,662	1,732	1,799	1,861

Chart 2: Domestic demand for pulses



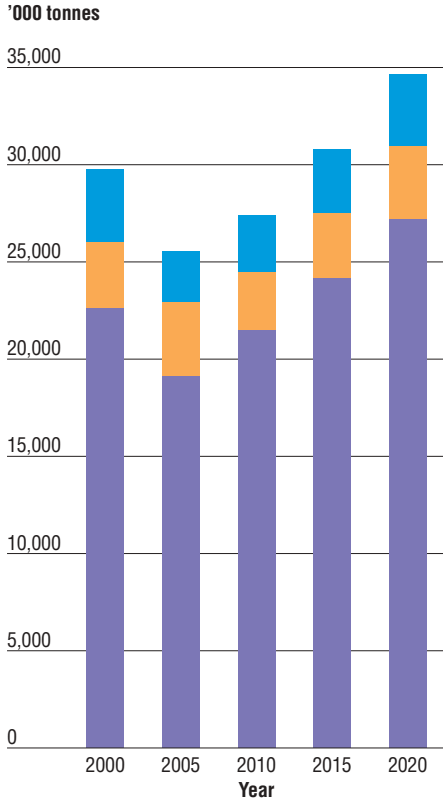
	2000	2005	2010	2015	2020
Seed uses	118	133	151	170	191
Processing uses	0	15	17	19	22
Stockfeed	787	908	1,039	1,178	1,333
Meat replacement			3	3	8
Food	65	68	71	74	76

Chart 3: Domestic demand for oilseeds



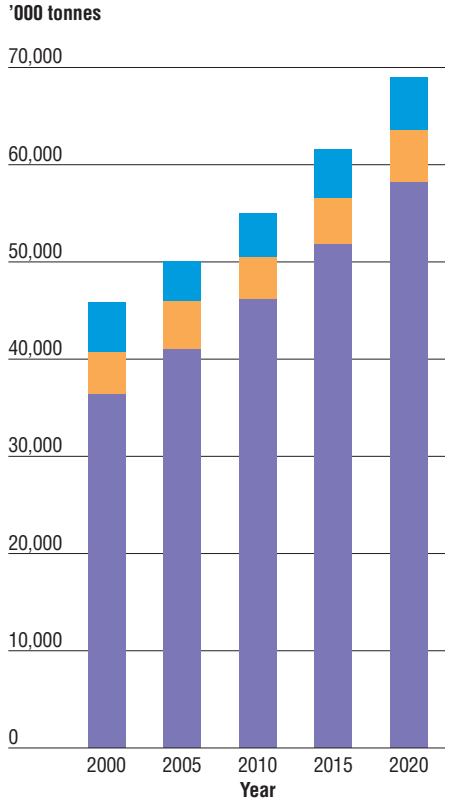
	2000	2005	2010	2015	2020
Seed uses	21	23	26	28	31
Processing and industrial uses	1,144	1,200	1,250	1,298	1,343
Diet change			2	4	7
Used as meal in stockfeed	188	198	248	282	319
Food	83	87	91	95	98

Chart 4: Export demand for existing uses of Australian grains



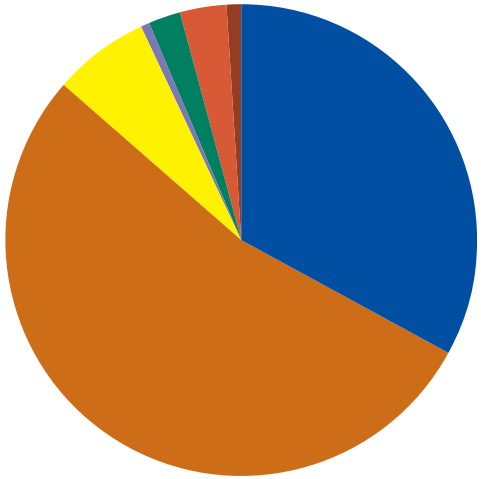
	2000	2005	2010	2015	2020
Total oilseeds	3,749	2,595	2,920	3,285	3,695
Total pulses	3,400	3,856	2,994	3,368	3,789
Total cereals	22,617	19,083	21,468	24,152	27,171

Chart 5: Total demand for Australian grains – existing market uses only



	2000	2005	2010	2015	2020
Oilseeds	5,185	4,103	4,537	4,992	5,493
Pulses	4,370	4,980	4,275	4,812	5,419
Cereals	36,337	40,962	46,160	51,800	58,130

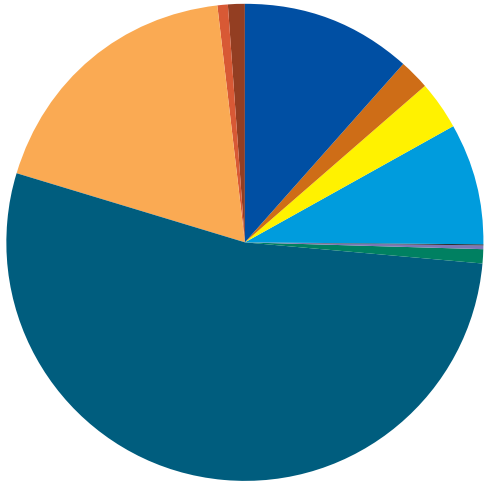
Chart 6: Emergent uses for cereals – 2005



	'000 tonnes
Ethanol	165
Agriceuticals	268
Biodegradable, eg plastics	33
Starch	0
Animal litter	0
Cosmetic materials	3
Aquaculture feed	11
Livestock feed concentrate (export)	0
Meat substitutes	0
Antioxidants	16
High molecular weight ingredients	5
Low Cal/Carb Wheat	0
Non-allergenic cereals	0
Biomass use of waste	0

TOTAL = 501,000 tonnes

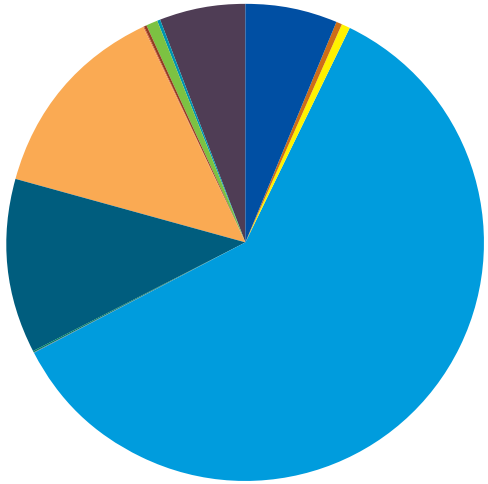
Chart 7: Emergent uses for cereals – 2010



	'000 tonnes
Ethanol	639
Agriceuticals	114
Biodegradable, eg plastics	182
Starch	455
Animal litter	4
Cosmetic materials	14
Aquaculture feed	53
Livestock feed concentrate (export)	2,946
Meat substitutes	1,022
Antioxidants	39
High molecular weight ingredients	63
Low Cal/Carb Wheat	0
Non-allergenic cereals	0
Biomass use of waste	0

TOTAL = 5,531,000 tonnes

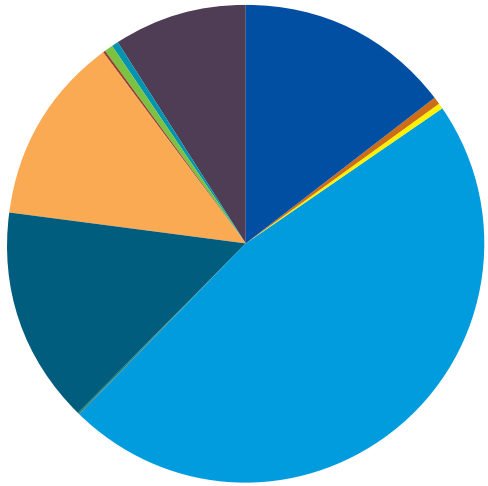
Chart 8: Emergent uses for cereals – 2015



	'000 tonnes
Ethanol	4,661
Agriceuticals	296
Biodegradable, eg plastics	433
Starch	44,967
Animal litter	10
Cosmetic materials	17
Aquaculture feed	75
Livestock feed concentrate (export)	8,837
Meat substitutes	10,217
Antioxidants	47
High molecular weight ingredients	135
Low Cal/Carb Wheat	583
Non-allergenic cereals	155
Biomass use of waste	4,353

TOTAL = 74,786,000 tonnes

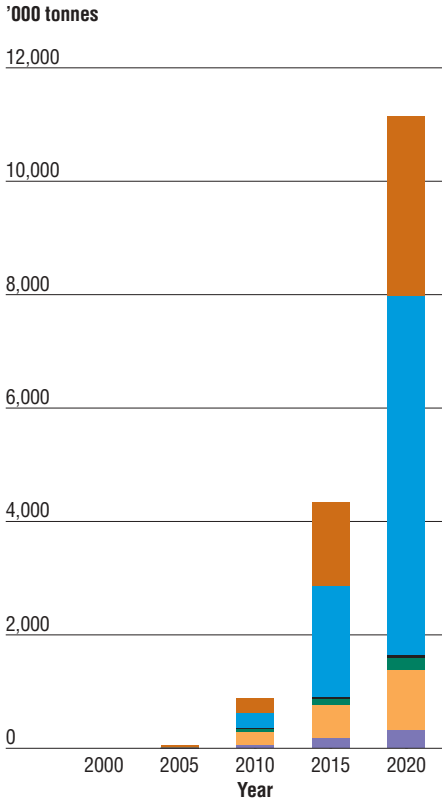
Chart 9: Emergent uses for cereals – 2020



	'000 tonnes
Ethanol	17,552
Agriceuticals	597
Biodegradable, eg plastics	455
Starch	56,584
Animal litter	26
Cosmetic materials	22
Aquaculture feed	109
Livestock feed concentrate (export)	17,673
Meat substitutes	15,326
Antioxidants	56
High molecular weight ingredients	169
Low Cal/Carb Wheat	699
Non-allergenic cereals	543
Biomass use of waste	10,882

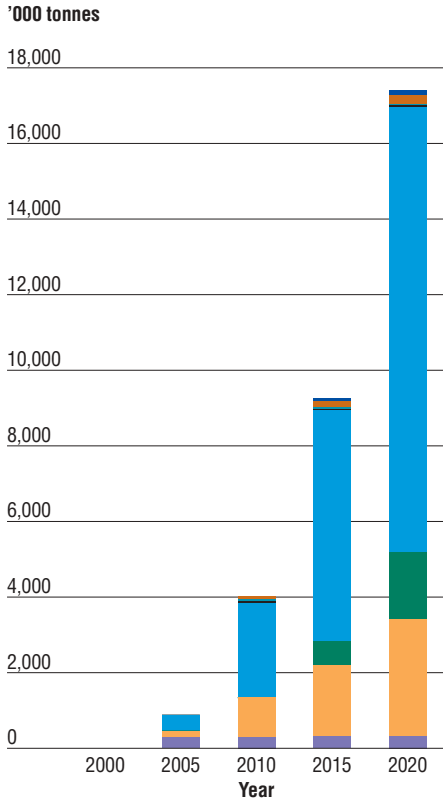
TOTAL DEMAND = 120,693,000 tonnes

Chart 10: Emergent uses for pulses



	2000	2005	2010	2015	2020
Biomass	0	53	264	1,479	3,170
High protein animal supplement	0	0	264	1,955	6,340
Aquaculture feed	0	0	10	29	53
Food ingredients	0	0	58	116	211
Functional foods	0	0	232	581	1,057
Nutraceuticals	0	0	50	174	317

Chart 11: Emergent uses for oilseeds



	2000	2005	2010	2015	2020
New crops for pharmaceuticals	0	0	12	59	120
High protein oil products	0	0	91	178	237
Expand soybean	0	0	35	37	39
Specialty oils – health	0	0	44	46	49
Aquaculture	0	412	2,509	6,094	11,756
Industrial lubricants	0	0	0	629	1,796
Biodiesel	0	171	1,041	1,900	3,081
Import replacement	0	289	298	310	320

What's stopping us?

General

In a world that needs more innovation and innovative enterprises to shape the next century, we need more job makers, more future makers and more price makers.

This requires a major emphasis on a Single Vision-directed industrial restructuring, not a problem-centred grain production restructuring.

Over the next two decades, Australia needs to:

1. redesign grain production and technologies systems using a process of re-imagination and reinvention
2. diversify investment in production to supply grain from a range of centres including off shore sites controlled by Australian equity.
3. respond more quickly to demand from international markets for existing and new uses of grain products, derivatives and fractions.
4. become a supplier of technology and infrastructure to the global grain production, handling and transformation value chain, and
5. ensure participants in the grains industry learn to work together more productively and effectively to create ecological and social prosperity.

Building greater innovation and leadership capacity will allow the industry to market itself and its personnel as world leaders in all aspects of the emerging world of grain.

Of critical concern are problems with transport infrastructure policy in Australia[1] which is characterised as:

- being short term in focus
- having insufficient cooperation between governments and the private sector
- failing to account for greenhouse gas emissions when allocating funds to roads
- suffering rail investment that is ad hoc and not performing well
- having existing infrastructure that is not efficiently used
- where new technology is slow to be adopted, and
- having no overall national transport infrastructure plan or strategy and thus nothing to guide priorities.

'Australia's grains industrial sector is currently unsustainable. There will certainly be disagreement about which particular aspects of the current industry are unsustainable. A great deal of work and dialogue is needed to fully describe a vision for sustainable grains industry and the strategic journey required to get there'.

– Futurist, Peter Ellyard, 2004

There is an array of environmental forces likely to impact on agriculture as a whole, and the grains industry in particular, including degradation of rural landscapes, regional economies and non-urban community retention.

One view is that the present Australian grains industry is unsustainable in these terms.

1 Transport Infrastructure: report NIEIR

Industry supply profile

It will be critical to move from a traditional to a full value chain orientation:

	Traditional	Value chain
Information sharing	Little or none	Extensive
Primary focus	Cost/price	Value/quality
Orientation	Commodity	Differentiated product
Power relationship	Supply push	Demand pull
Organisational structures	Independent	Interdependent
Philosophy	Self interest	Chain optimisation

Source: Frank Engelbart, Rijnconsult, June 2000

Creating economic prosperity involves a new long-term perspective on the value of the grains industry within a wider focus on the significance of the rural community to Australia.

The industry should not only concentrate on creating a sustainable and prosperous grains industry but should also encourage the redevelopment and construction of healthy rural communities. Rural communities, of which grains producers are a part, are declining and motivated and educated people are being lost to the cities.

If this approach is taken, by 2025 the Australian grains industry – from production through to final consumption – will be an exemplar of sustainable production, consumption, development, lifestyles and grain technologies within Australia's natural resource and climatic conditions.

Over the next twenty years Australia will design a range of sustainable natural resource management technologies and production systems that demonstrate new ways to avoid collateral damage to the environment.

This will maximise the value of sun, soil enhancement technologies and cost-effective water-use to protect bio-diversity, productively utilise waste and generate new sustainable grains industry opportunities.

Opportunities also exist for improvements in the supply side of the industry, assuming the major changes required are forthcoming.

The Australian supply chain needs to move from:

Fragmented → to → Integrated

Functional → to → Business focus

Product focus → to → Customer focus
Customer's customer

Transactions → to → Relationships

Inventory → to → Information

Peter Reading, GRDC Managing Director

Casualties?

There are currently some 40,000 grain producers in Australia, – 39 percent of them classed as “grains only”, 38 percent as “mixed farming” and the remaining 23 percent is spread across a range of industries, such as cotton, beef and sheep, where grain production is a minor part of their activities.

It is widely believed that grower numbers will decline as farms aggregate, but it is unlikely that the number of enterprises will fall below 30,000 by 2025. This is in the expectation of new grain industry enterprises developing in the northern regions of Australia and new grain markets supporting the sustainable prosperity of grain growers in other parts of Australia.

Australia still has a large number of small and medium sized farms available for aggregation. Opportunities for domestic processing of specialised contract grains and emerging new grain uses may bring consolidation of farms and changes in farm management systems.

This could mean the Australian grains industry having 27 percent focused grain farmers by 2025, 21 percent mixed farmers and 52 percent users or producers of grain for stockfeed, and/or special-use grain processing capacities.

Rich and poor communities

There are approximately 90,000 farmers in the Northern Region (Queensland and NSW north of the Macquarie River), 140,000 in the Southern Region (balance of NSW, Victoria, South Australia and Tasmania) and 60,000 farmers in the Western Region (Western Australia).

Household incomes vary widely between farms with 19 percent of farmers classed as “very well-off” and 22 percent “very low income”, with a wide spread of incomes between these two groups.

There is evidence older, less affluent farmers have a lower level of education and lower levels of confidence in the economy in the next few years.

The next two generations of farmers differ from current farm owners in one key dimension – level of completed education.

The next generation – those aged 45 to 60, will be multi-skilled, highly competent, commercial farmers with an intense understanding of regional farm economics and futures.

The generation after that will be highly professional farmers with professional qualifications and a national and global farm agronomics orientation.

Farm owners and farm workers around Australia share a common view that a focus on the family farm and farm relationships is the major consideration in most farm decision-making.

Farm advisers and professional/managerial consultants do not share this view. They appear not to be concerned about the decline in the social activities of a rural community nor the decline in local infrastructure. They tend to take higher than average incomes and wealth from the industry as a whole, while still living in the non-metropolitan area.

Conclusions on demographic trends

A key conclusion is that issues of long-term industry leadership, succession planning of the family farm, retention of community infrastructure and declining household incomes for the majority of older farmers and employees need to be addressed.

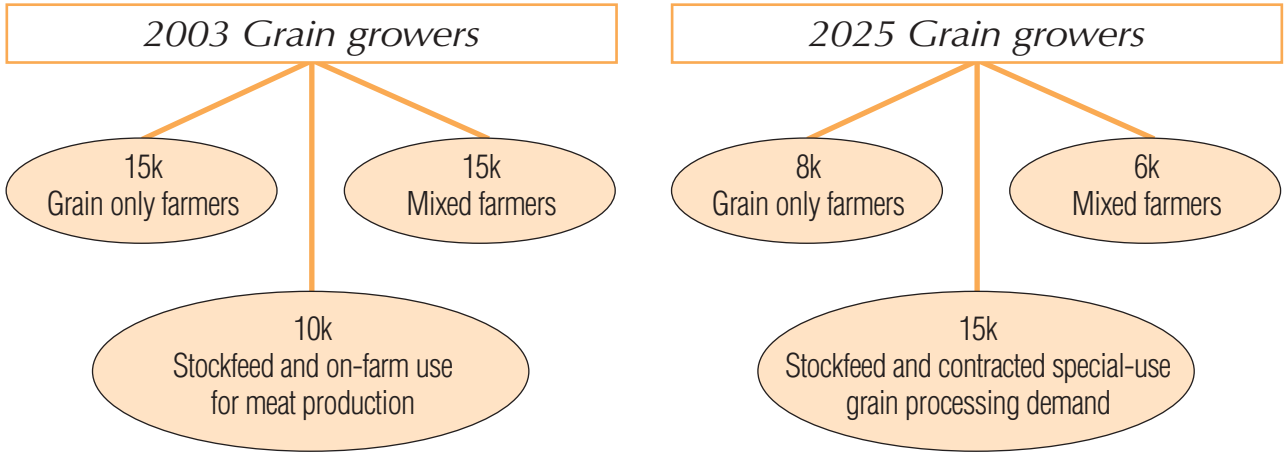
The alternative is to see a very small number of affluent farm owners setting the short-term framework for the residual regional communities and large-scale farm integration over the longer term.

Grower numbers are likely to fall below 30,000 by 2020 (see Figure 3), for the reasons outlined in the Gallup analysis and:

- reality of global demand consolidation
- increasing competition from lower cost countries causing an on-going reduction in terms of trade and margins, and
- the potential for bi-lateral trade treaties opening the Australian market to imports.

Grower numbers may not fall to the degree mentioned earlier if the trend towards mixed farming continues, where meat production is leveraged and the development of new product applications accelerates.

***Figure 3:* Potential changes in grower demographics**



Source: Neil Clark & Associates 2003

Supply analysis: What do we have to do to get there?

The Australian grains industry has experienced a period of rapid change since the mid 1980's. Varying market conditions and heightened levels of competition have driven much of this change.

The repeal of state and federal legislation has removed artificial barriers caused by state borders and incompatible logistics platforms. As this process has evolved key industry participants have broadened the scope of their business via mergers, acquisitions, joint ventures and alliances. The changes have involved moves to new geographic regions, to new service offerings and new technologies.

No single body captures the information required to maximise the potential for grower control and equity in the future of the Australian grains industry.

Similarly, no single industry body can supply integrated data on the costs, inputs and prices of the demand, supply and title value chains.

Consequently, a full model for rationalisation of costs and provision of required capacities and capabilities is essential for any Australian grains industry strategy for the years 2005–2025.

Analysis of the supply chain indicates three generations of grain producers are currently active in grain production.

These determine the long-term industry capacity to balance the ecologically sustainable level of production – perhaps twice the current level – and the potential economic demand – which may be 500–600 percent of the current levels.

The corollary of this supply position is that while yields per hectare will continue to increase, price per tonne will decline and those grain growers who are closest to market will be advantaged.

The industry should ensure decisions are made for the industry as a whole, rather than for the "better off" growers at the expense of those struggling to maintain economic viability.

Opportunities may exist for Australian grain growers as owners of new industries, rather than as simply producers within Australia, but this will require organisational and cultural changes for them, as well as to capacities and capabilities right across the grain industry chains.

Changes are needed not only to maintain Australia's cultural focus for grain production, but also for the establishment of new ways of regulating and encouraging sustainable prosperity.

Developments might include:

- new infrastructures and actions to encourage entrepreneurial initiatives that can double current production by 2025
- improvements in the management of farming systems, regional catchments and water use
- increased on-shore processing of grain products and derivatives
- new industries like nutraceuticals, functional foods, specialised end use ingredients, and life science supply, and
- grower participation in, and ownership of these emerging developments.

Without these changes, grower numbers are likely to fall below 12,000 by 2020. The current trend is to have less-focused grain production with a benevolent marketer.

Unless grain production becomes more demand and market-driven (including the export of meat and processed grain-based ingredients) this trend will continue.

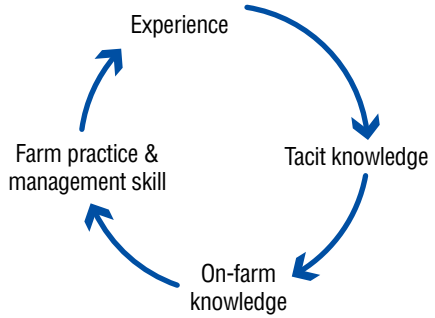
It is beyond the scope of this report to represent the detail of the demand, environmental constraints and supply information provided by the industry through the interview and research phase of this project.

Please refer to supporting material and evidence for fuller discussion.

The predominant weaknesses in the existing industry framework arise from the separation of the agronomic and environmental drivers of grain production from the previously described emerging sources of demand.

The supply chain starts and relies on the grower's learning cycle

The biggest threat to the achievement of these potential opportunities for growers and others in the value chain lies in the inherent fragmentation of current grains industry structures.



Fragmentation causes a breakdown in the learning, experience and knowledge base. This impacts on demand signals, supply arrangements, quality assurance, traceability capacity and access to emerging industries and must be addressed.

Australia must aim at becoming a world leader in the integrated supply of quality assured grain and grain derivatives.

The sustainable prosperity of all participants in the supply chain ultimately rests on an appreciation of the complexity of the grains industry as it is now organised.

Decisions related to which crop to grow in response to any market signals along the supply chain are driven by a combination of factors, including market price signals, and/or market access, growers' ability to produce a particular crop under their regional circumstances, and the sustainability or impact of that crop on their production base.

Crop rotations are driven very much by the benefits the grower can see in the relatively short term. Alternative supply of a diversity of grains is dependent on the growers' observation of potential yield and financial returns from the crop.

In addition, growers think of rotations in terms of other issues: disease management, summer and winter phasing, weed management and overall property management.

Advisers provide tactical and strategic advice on agronomy and inputs. Fee-for-service consultants tend to be trusted and consulted more frequently than retail-based advisers.

Advisers are key industry agents for change in the current knowledge management system. They hold a one-to-one relationship with their grower clients and understand the specific management and farm practice skills required by a grower. This is in harmony with growers' tacit knowledge and community support systems, such as grower groups and GRDC supplied information.

Growers' speed and capacity to access demand signals and industry knowledge rely on locally accessible knowledge management systems linking explicitly to tacit knowledge.

Opportunities for growers to meet the needs of their families and communities – the ultimate motivation for most grain growers – rely on access to comprehensive, honest and independent information.

There is an increasing movement towards direct contracts between growers and marketers who are seeking to meet the specific and direct end-user needs in niche market segments.

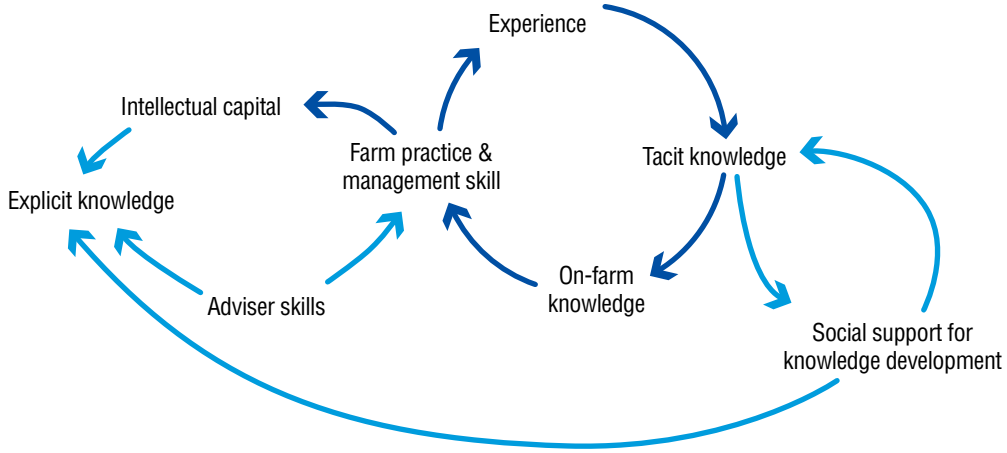
The benefit from such direct trade is that a shorter supply chain allows better direct communication between customers and growers, a bigger share of value chain benefits in growers' pockets, and greater end-user confidence afforded by fully quality-assured product.

Growers contribute the ability to respond to these signals and arrangements by employing their skills in integrating the physical resources, seasonal and temporal knowledge and agronomic and farming system practices.

Younger and more professional growers who will be managing tomorrow's properties – including off-shore production – will be successful because they can access technical crop production information, best farming systems for their region and knowledge systems to stay ahead of their competitors in taking up the new opportunities in each cycle of the 2005–2025 period.

The extent of ownership and control of the emerging intellectual property – advances in plant breeding, grain and quality standards, regionally tailored farming systems innovations, knowledge and understanding of the full industry value chain processes – will provide the competitive advantage for Australia.

Growers need access to local market information – domestic needs in the early stages of this strategic plan – and early and appropriate entry into longer-term international grain contract opportunities. The limited size of the Australian market dictates that returns from new production technologies and intellectual property must be captured in the new structures of the grains industry.



By integrating customer demand with new production technologies that increase yield, growers and grower groups can develop more direct relationships with customers, improving viability and capturing a greater share of industry benefits.

For example brewers may reward quality assured and traceable supply with 10–15 year contracts direct with growers thereby delivering surety for growers, maltsters and the brewing company.

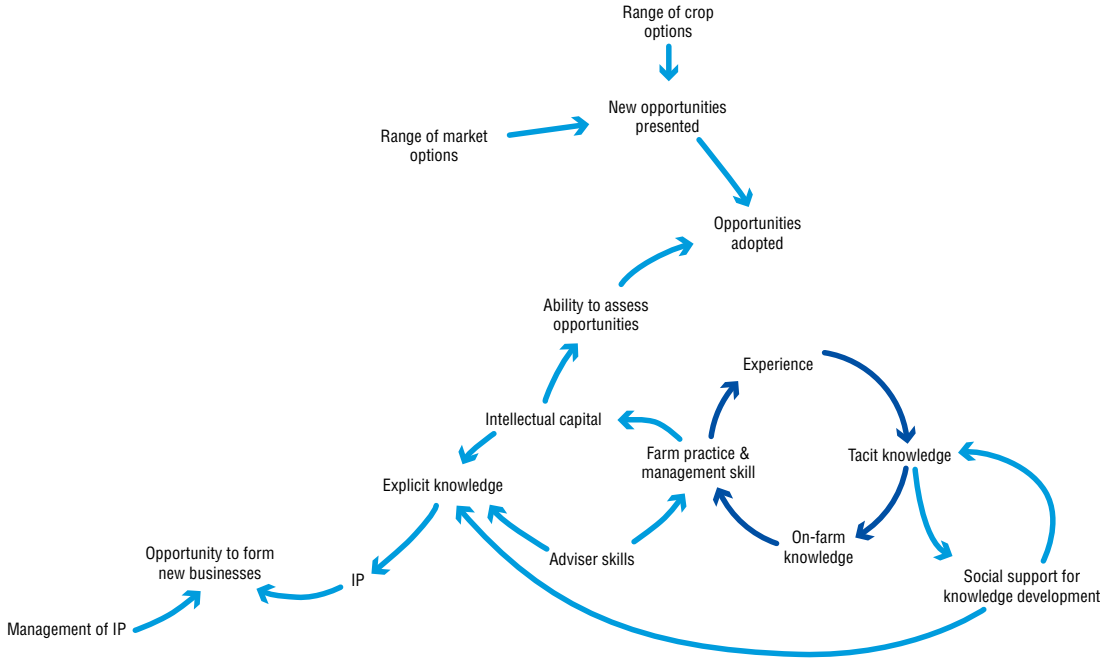
Increased speed in taking these opportunities will prove the key for entry and grower control in new markets.

Lead times for new technologies can be considerable. Market potential and industry trend information is therefore critical.

A need exists to ensure that open and accurate information is easily and quickly available to the growers and their support structures.

A need also exists to better link technology suppliers with grower groups and consultants to ensure the most relevant, immediately productive use of these technologies that can deliver yield or other benefits to growers.

In this way the industry will continue to align and enter private partnerships along the value chain to capture more value for participants.



Grain handling, marketing and intellectual property

Growers expressed confusion about the lines of responsibility between grain handling and marketing operations – which are often focused on commercial shareholder models and not on reducing transaction costs.

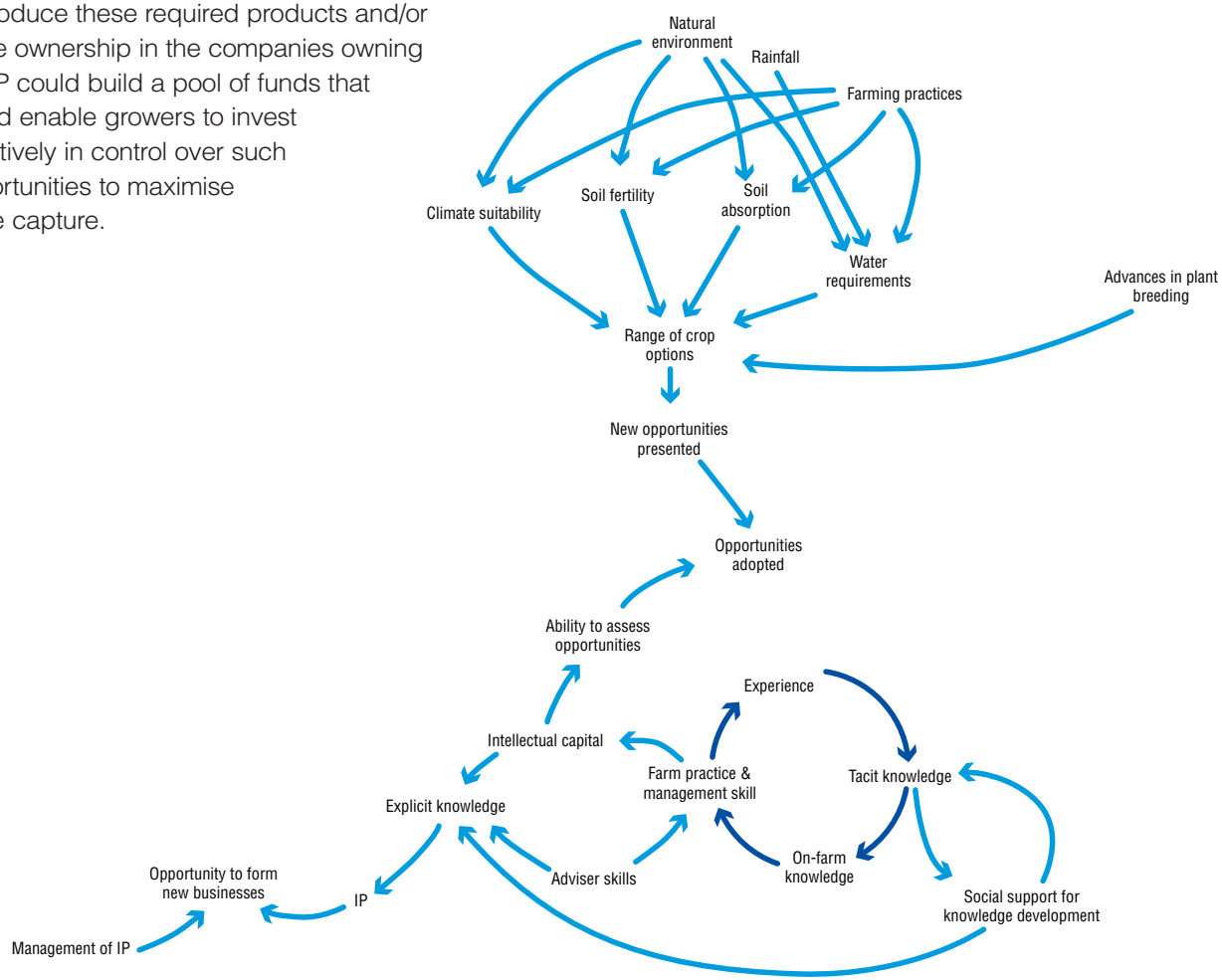
This perception of confusion extends to whether some organisations are self-serving or grower serving.

While most grains are currently traded as bulk commodities, it is perceived that international and emerging industry contracts will create opportunities for higher value markets for wheat and other crops.

When these markets eventuate, the intellectual property (IP) driving them will either be in the hands of international companies, or be accessed through one of the Australian channels able to offer international markets the added value of segregation, QA, and traceability.

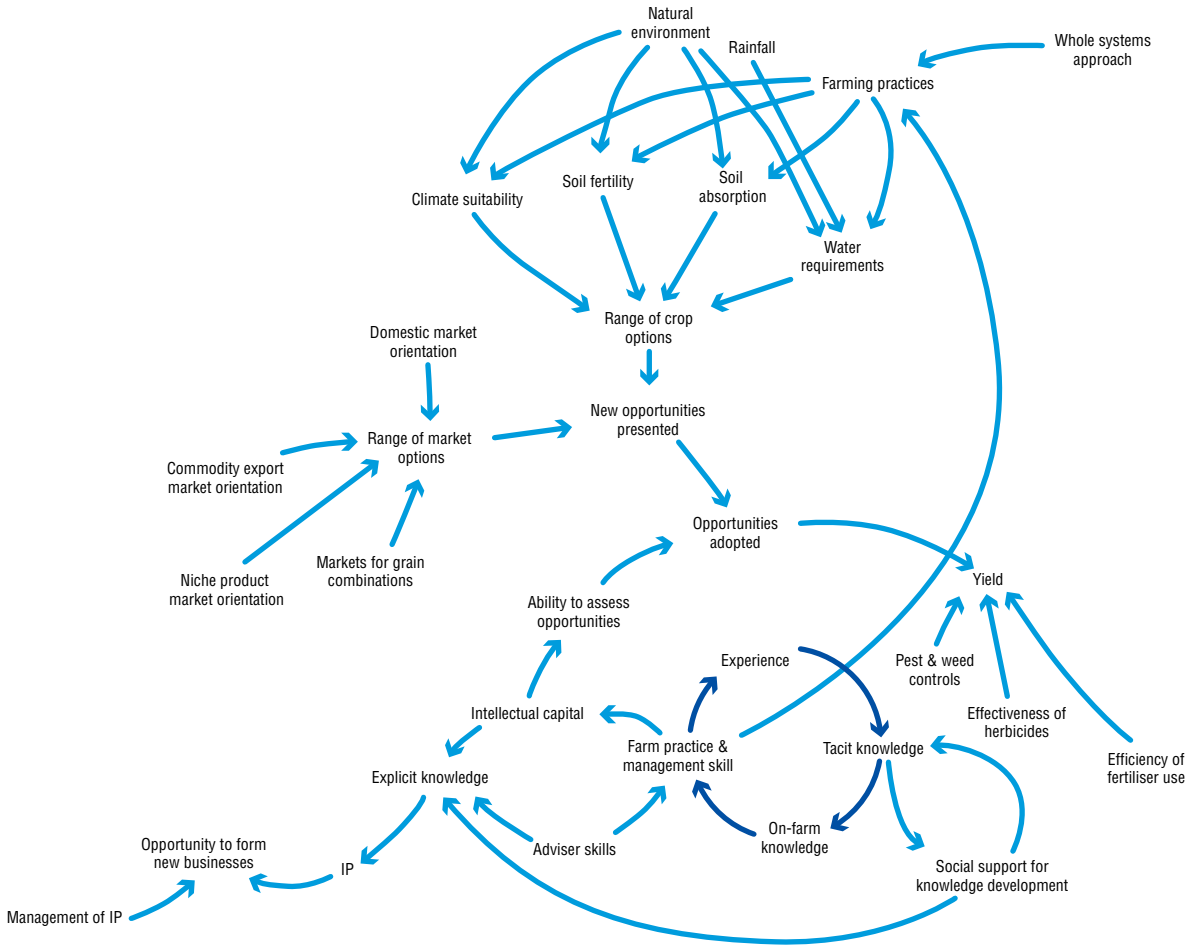
Linking with international corporations that seek Australian industry capacity to supply these market requirements could occur in a number of ways.

The opportunity for grower equity in the IP needed to produce these required products and/or share ownership in the companies owning the IP could build a pool of funds that would enable growers to invest effectively in control over such opportunities to maximise value capture.



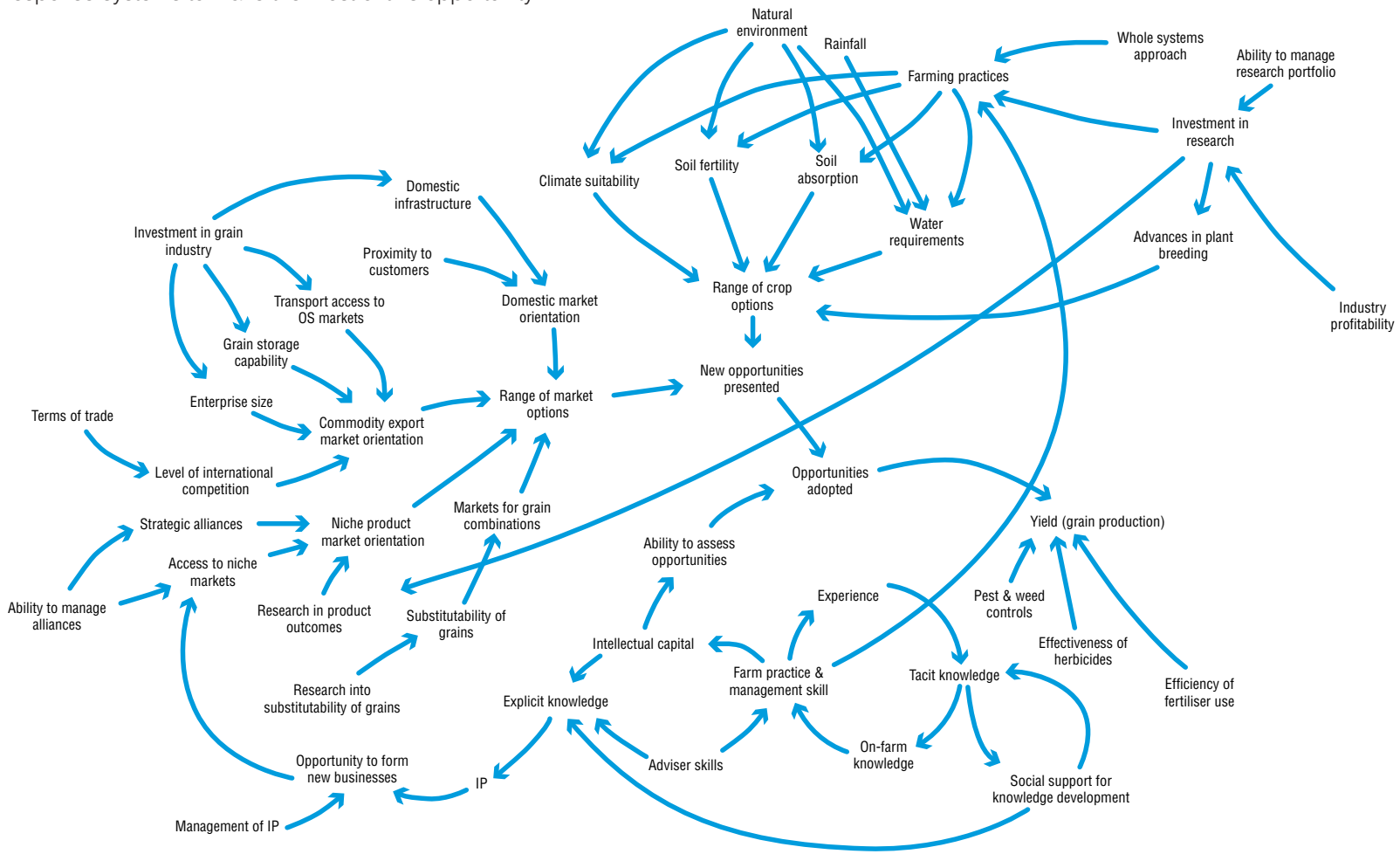
At the same time it will be imperative that growers have direct access and involvement in building information and feedback loops on supply and demand projections, price and quality requirements, segregation, emerging quality and handling requirements and feedback to breeders and marketers regarding end uses.

This could be provided through collaboration, currently strongly reinforced by single desk systems for supply and purchase.

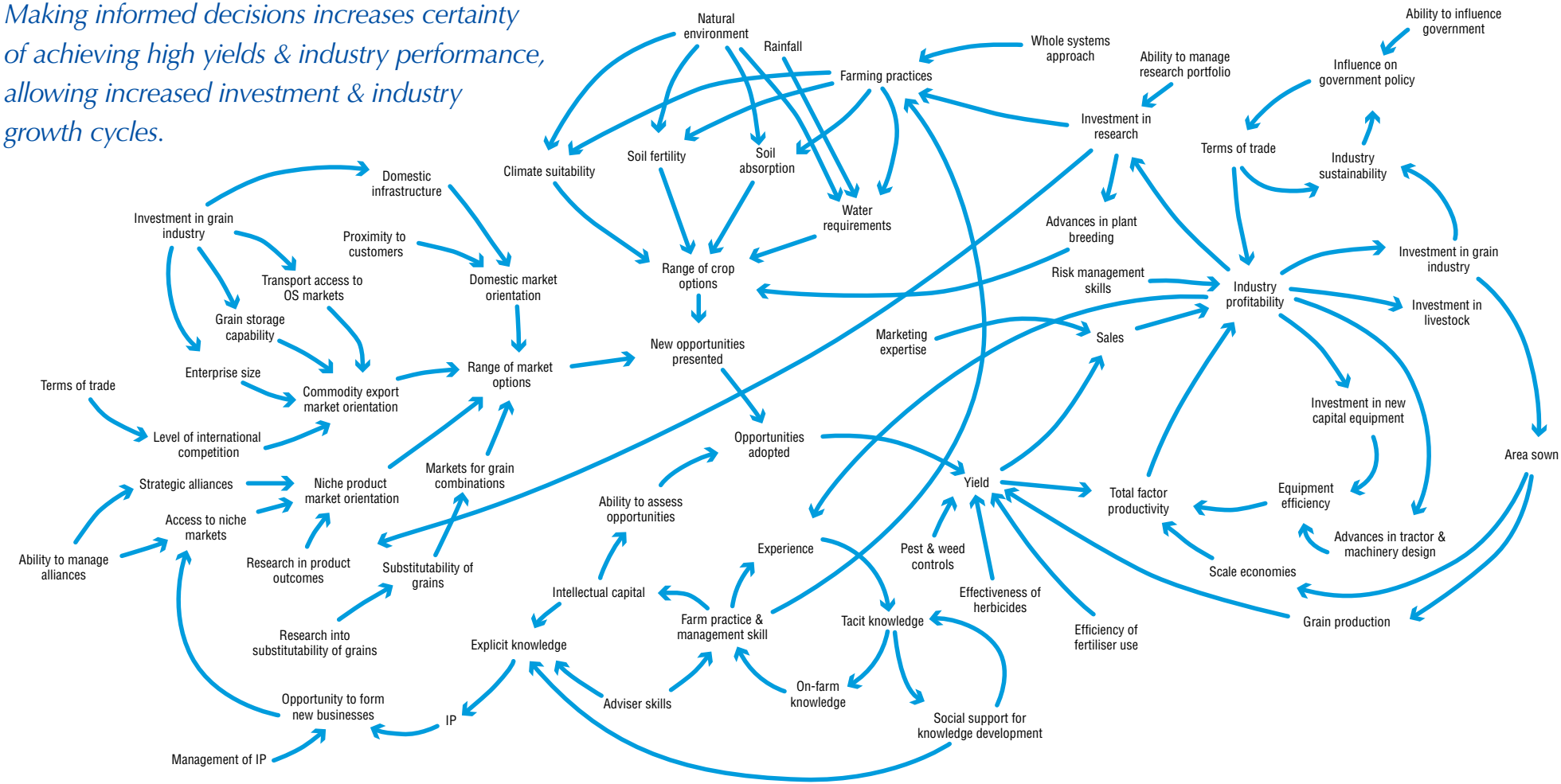


In the future international demand and trading agreements with full access to information on customer needs will set the parameters for supply chain signals and grain flow controls.

Australia will need to invest in leadership and facilitation with a range of skills including trade options and processes, price risk management, integrated grain production and market design and response systems to make the most of this opportunity.



Making informed decisions increases certainty of achieving high yields & industry performance, allowing increased investment & industry growth cycles.



Primary and secondary manufacturers

Australia must become an internationally competitive, environmentally sustainable, seasonally consistent and regular supplier of contracted grain that meets the requirements of primary and secondary manufacturers.

The current focus on purchase price and reduction in manufacturing inputs must be replaced by a focus on value delivery as a combination of tradeable benefits that lead to higher net free cash flows in the industry.

The requirements of international food chains and multinational chemical, pharmaceutical and life science corporations will place heavy emphasis on conversion of research investments into appropriate knowledge management for the necessities of end user grain use specifications.

Manufacturers expect Australian growers to respond to global and local shifts in product streaming, long-term contracts for food processors, traceability and identity preservation.

When the current ticket/spot cash/seasonal trading arrangements are replaced with higher on-farm storage capabilities, quality blended product, hygiene management and rail and container logistic capacities, these will become more significant determinants of costs in contracts than port handling and shipping components as a driver of manufacturer choice.

The potential for new entrants to global markets, supplying manufacturers from non-traditional sources of export grain, will increase where the focus is solely on price discounting.

For Australia to gain a strategic foothold in these emerging supply chains we will need a collaborative grains industry production and supply perspective that can reduce market fragmentation that adds cost to the manufacturer.

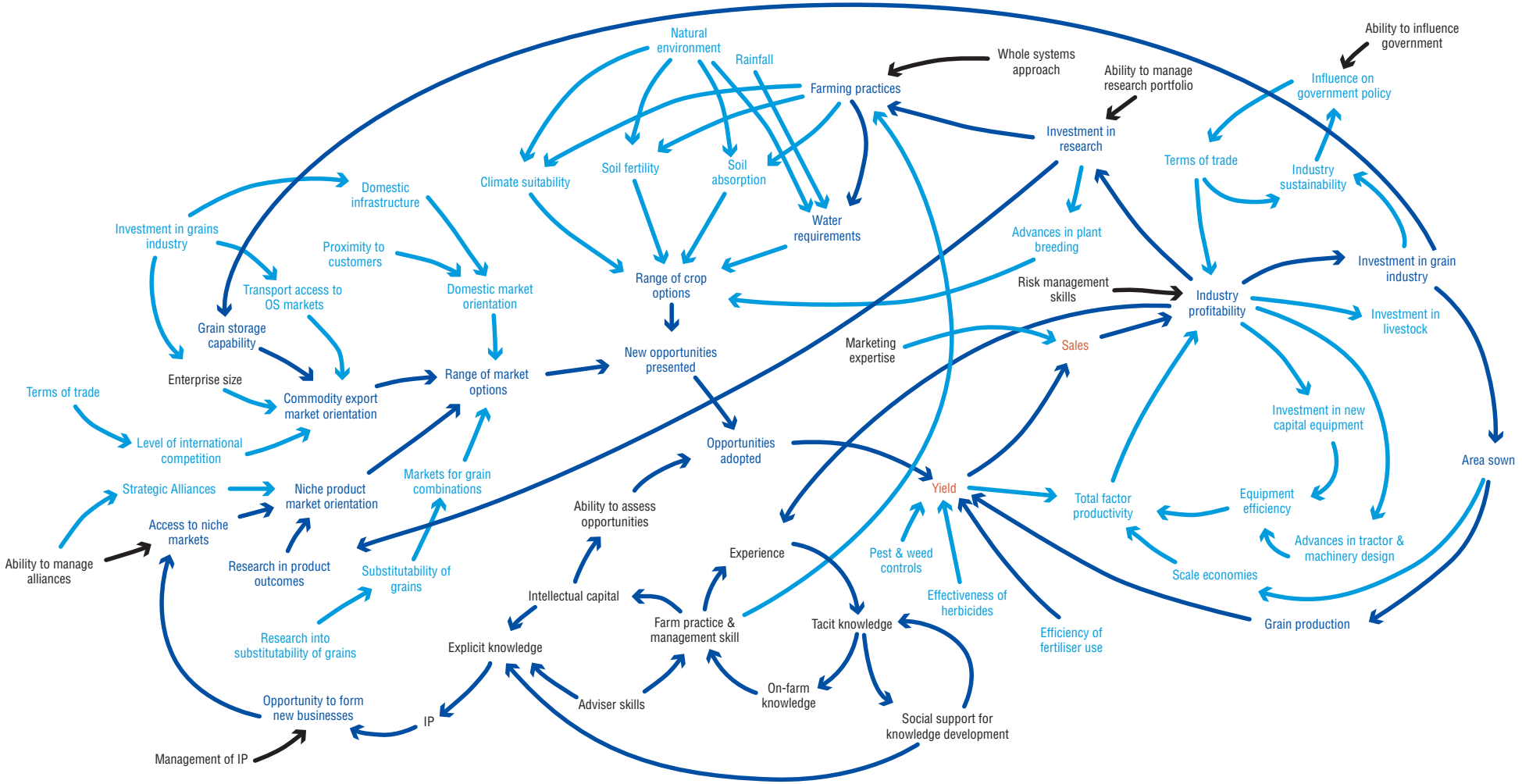
Those that create and market the innovations in the industry with superior access to the know-how of the Australian grains industry will become the economic successes of the 21st century.

This is the way forward to achieving a knowledge/innovation base that enables growers to gain lead-time and response capacity for the creation of sustainable agriculture.

New agronomic and production processes, supplying grain derivatives, are required to build equity in the emerging transnational markets.

Activities that address the following areas are needed to meet the specifications supplied by the manufacturing sector:

1. investment in market, product and production/process research and development to create supply chains that are highly responsive to emerging and changing demand
2. investment in building the “Australian” brand through appropriate quality specification and management of both product and access process that reinforces the positioning options chosen, effective governance and risk management both on behalf of buyer and supplier
3. risk management of the food, pharmaceuticals, nutraceuticals, and beneficial foods value chains are all seen as representing minimum requirements for access to key markets in the short to medium term as a contribution to value, and
4. investment in leading knowledge creation, management, communication and deployment processes and systems is required.


Natural environment
Rainfall
Whole systems approach
Ability to influence government
Ability to manage research portfolio
Influence on government policy
Farming practices
Investment in research
Terms of trade
Industry sustainability
Climate suitability
Soil fertility
Soil absorption
Water requirements
Domestic infrastructure
Investment in grains industry
Proximity to customers
Advances in plant breeding
Investment in grain industry
Transport access to OS markets
Domestic market orientation
Range of crop options
Risk management skills
Industry profitability
Investment in livestock
Grain storage capability
Marketing expertise
Sales
New opportunities presented
Enterprise size
Range of market options
Terms of trade
Commodity export market orientation
Investment in new capital equipment
Level of international competition
Opportunities adopted
Area sown
Strategic Alliances
Niche product market orientation
Markets for grain combinations
Yield
Ability to assess opportunities
Total factor productivity
Equipment efficiency
Access to niche markets
Pest & weed controls
Experience
Advances in tractor & machinery design
Ability to manage alliances
Research in product outcomes
Substitutability of grains
Scale economies
Intellectual capital
Effectiveness of herbicides
Tacit knowledge
Farm practice & management skill
Grain production
Research into substitutability of grains
Efficiency of fertiliser use
Explicit knowledge
Adviser skills
On-farm knowledge
Opportunity to form new businesses
IP
Social support for knowledge development
Management of IP

Wholesalers/agents & retailers

The traditional market has relied on signals from end users and consumers to build an intermediary role in creating bulk purchase agreements.

Competition in lower priced grains, which may require storage or segregation for inter-seasonal transfers, can generate delays that impact on growers' crop decisions. These cycle time decisions will impact not only on the return available to the grower from current crop production but also equity in subsequent grain use and could be managed through wholesalers, grain handlers or on-farm storage arrangements.

Purchasers are in a position to work with grain handlers and transport authorities to smooth out the purchase and production cycles, particularly when there are either substantial surpluses or shortages on grain in the market.

At the same time, because of their access to end use consumers and retailers, there will be a tendency for wholesalers to become a new grain intermediary, setting standards by virtue of their investment/joint ventures in grain storage and handling capacity.

Where this may become significant will be in low-priced grains used outside the food chain, especially where it is being used either as an energy source, for stockfeed or for a variable demand source of grain-based ingredient.

Generally, the grain handling companies are likely to take up this role and work closely with the manufacturers to smooth out pre-processing and pre-sale requirements between the season of production and the period of actual use. As new specialist uses and industries emerge, and direct contract arrangements between global cartels and multinational corporations emerge this role will diminish.

The only significant new role for wholesalers will emerge for off-shore production and ownership by Australian growers where these could act to supply the requirements of long-term contracts for new sources of demand.

These may find a role where Australian-based production cannot meet the supply for these uses in new industries such as biosciences, bio-fuels, health-related uses, and ag-service industries.

Such wholesalers may need to moderate variable off-shore demand and find and create new retail and consumer outlets.

Over the next two decades the Australian grains industry will need to build its authority, power and influence as a preferred supplier of grains and grain related technologies.

It will need to be able to form global, regional and local trading frameworks that offer greater flexibility and access to sources of grain, greater discipline in the protection of brand, quality food and material supply.

Industry structures and administration profile

There is a widespread belief that there is a need for a non-aligned, non-political industry forum to bring the various components of the value chain together.

The large number of nominally representative bodies identified in this study and reported widely in the media strongly suggests the need for a business forum to bring together the diverse interests in the industry and reduce the overlap of industry associations, adding to costs.

Refer to Figure 4 for a representation of current industry bodies.

The interview and 2003 Search Conference outcomes suggest there are benefits in establishing industry-wide leadership and overall governance processes to build and sustain an internationally competitive Australian grains industry.

While there are many roles and functions that have been set out for a single industry peak council, this approach does not recognise the multiple of special interest needs and environmental constraints that underpin the industry.

The solution offered by many – a whole-of-chain peak industry body along the lines of the Australian Oilseeds Federation or Pulse Australia – has some appeal.

However, the suggestion of this strategy is for the establishment of an industry forum that facilitates observation, orientation and decisions to enable effective strategy formulation, decision-making implementation, governance and control procedures.

While GCA is still recognised as the peak grower voice on agri-political issues, many alternate voices have clouded the message that is being played to governments and other industries. GCA still represents the state farmer organisations and maintains all the official roles with government and industry companies.

Newer organisations that are representing different views have emerged and grown over recent years. Many of these organisations are well funded and are aligned with commercial interests; others are pursuing the views of groups that feel disaffected by current relationships

There is, however, an increasing need for leadership and priority setting in a rapidly changing environment.

To achieve the maximum gain from genuine improvement in market access it is essential that Australian grains industry leadership be established prior to major international trade variation.

This leadership needs to be seen in terms of encouraging the sustainable prosperity model for developing nations in particular and for the Cairns Group in general.

The current plethora of organisations in the Australian industry represents an unviable future, increasing the cost of doing business for a reducing number of grain producers.

The costs of establishing and maintaining beneficial international strategic alliances will require both rationalisation of industry representative associations and the on-costs associated with intra-industry negotiations.

The current structures and processes are unlikely to be sustainable beyond 2010.

The likely competitive pressures from new grain sources – including import substitution – will require more effective responses, which can best be organised with less fragmented industry bodies.

Quarantine restrictions operate to prevent incursions, but constitute no major barrier to international export arrangements and tariff protection has not been used to protect growers in Australia. ABARE estimates the Australian grains industry receives government assistance of up to 4 percent of gross revenue – lower than the international average – mainly in the form of exceptional circumstance relief and matching contributions to research and development.

The major international and structural changes that will face the grains industry between 2005 and 2025 will emerge from the reform proposals being put forward by key World Trade Organisation members, including the Cairns Group.

Australia's continuing push for free trade or bi-lateral trade agreements in agricultural products, and the reduction in agricultural subsidies in line with the DOHA mandate, constitute the most significant strategic direction for the Australian grains industry.

Figure 4: ***Australia grains industry representation relationships***

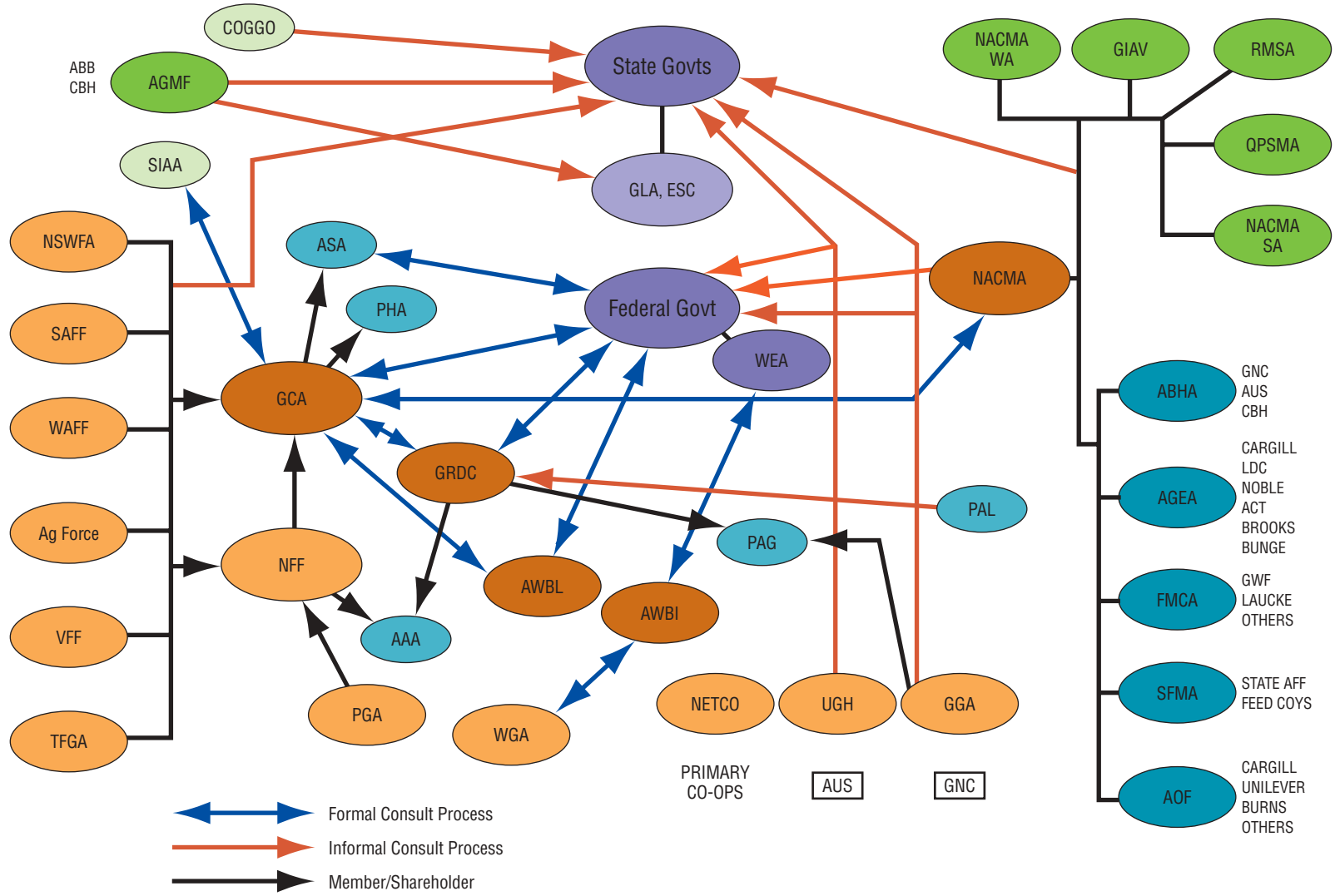
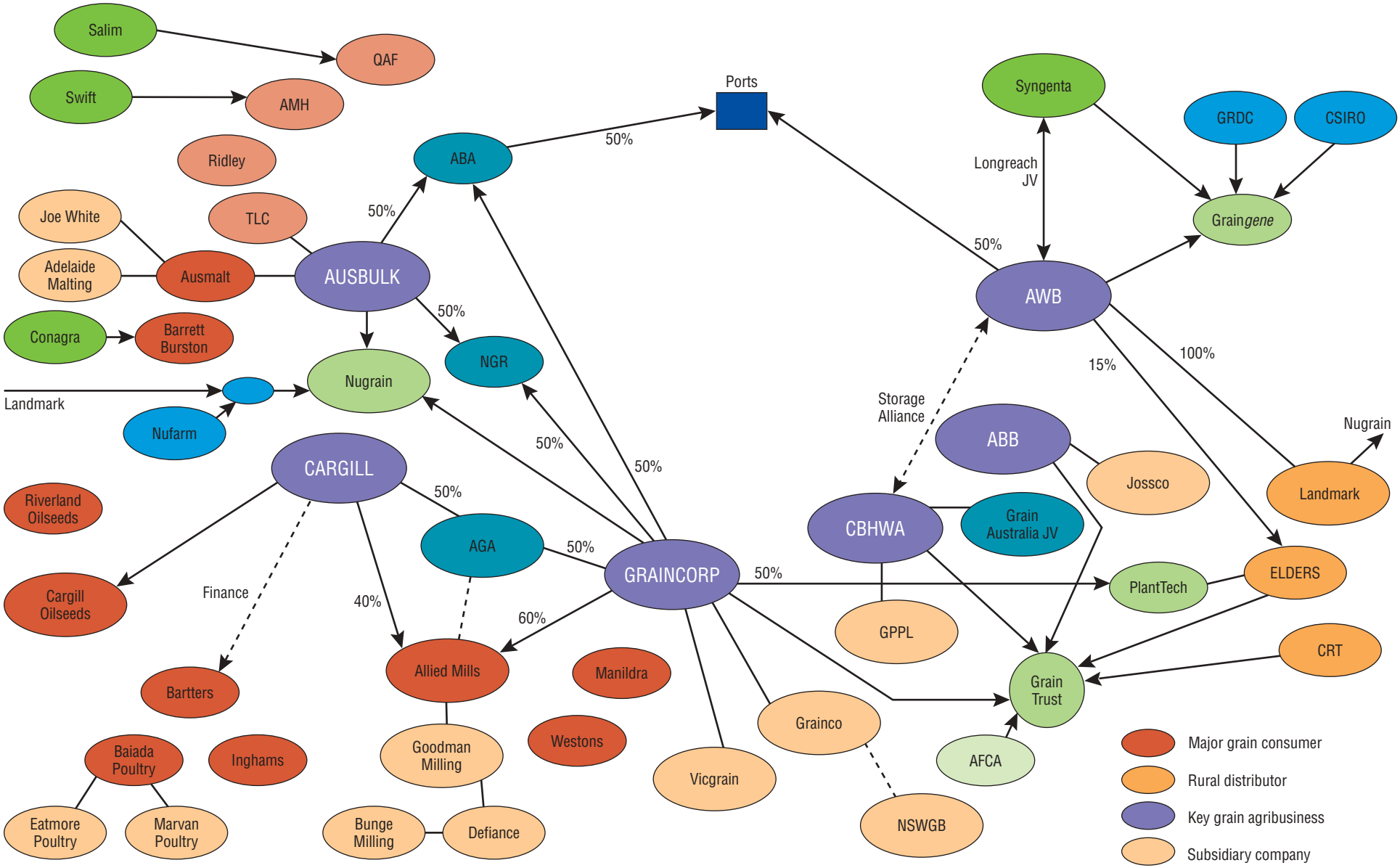


Figure 5: Australian grains industry agribusiness linkages



The sooner Australian grain producers can gain lowered tariff barriers and increase market entrance, the faster they are likely to gain net increases in the value of world trade and prices. This will be essential if declining terms of trade are to be addressed.

These changes will be phased in over the period of this proposed strategy, however, and can only be taken as generating a potential 5–10 percent improvement in market access for Australian grain, produced in Australia, in each of the five year windows of this proposed plan.

In this context, the Australian grains industry needs to continue to place a high priority on the alignment of grower representatives with other industry value chain participants to develop industry-wide policies and initiatives.

For the period to 2010, it will be essential to encourage a wide dialogue on the role and function of current marketing arrangements within the wider context of the WTO and DOHA related negotiations.

It may be necessary prior to 2010 to distinguish between stakeholder and shareholder administrative and accountability arrangements.

This would ensure increased competition and industry productivity and governance with a focus on maximising returns to growers.

At the same time maintenance of significant leadership in industry enterprises in the emerging global markets, and adequate provision for economic, social and cultural infrastructure required in water management, agronomic accountability, quarantine and risk management and farm systems would be served.

While there are considerable pressures for greater export freedom and liberalisation of grain export licences, there is general agreement that the combination of orderly marketing and pooling maximises trading expertise, mitigates risk and consolidates the potential to provide specialised short to medium term contracts for the entire range of Australian grains industry exports.

As the diagrams in Figures 3 and 4 indicate, the Australian grains industry is fatally flawed whilst it suffers massive fragmentation and internal competition both between the various value chains and between value chain elements.

The industry must take early steps towards overcoming obstacles and encouraging the introduction of new initiatives that will ensure Australian grain production is value added, demand focused, commercially viable and provides an ecological sensitive contribution to Australian prosperity.

Growers gave continued support for risk mitigation in markets. They desire, however, less rigid control, more flexibility for innovators, competition and a clear unambiguous focus on export customers.

However, international grain purchasers are building their own single desks within the Australian market for both grain imports and purchase for on-shore primary and secondary manufacture.

There is, accordingly, a strong case for single desk purchasing and marketing, as evidenced by experience in marketing malting and feed barley, and oilseeds (whole-of-industry) production.

This document does not take a position on options that require wider consideration of the structure within an overall industry strategy.

Table 5: Roles for an industry forum for dialogue across the whole industry

Role	Detail
Advocacy	Demonstrate non-partisan behaviour and priorities when acting on matters of policy, especially where industry member interests may be in conflict
Consultation	Consultative processes are in place to balance majority and minority industry interests in policy and strategy development and implementation
Gap analysis	Ongoing value chain gap analysis is completed in relation to the changing industry context
Industry direction	Industry vision, priorities, opportunities and risks are clearly identified and communicated in a timely manner
Market development	Support development of markets, technologies, products, infrastructure, knowledge management, communication systems and processes
Market information	Ensure identification and communication of market needs across the value chain
Quality management	Development and implementation of appropriate quality standards and quality management processes that support the industry "brand" and positioning strategies in key markets
Regulatory	Role in ensuring industry complies with international standards, commercial processes, regulatory frameworks, institutions support sustainable industry development, within legal parameters
Relationships and alliances	Encourage the building of relationships and alliances with key global players in the industry value chain, for example, with food companies, multinational grain companies, trading houses and seed technology providers to leverage concentration of industry ownership
Representative	Represent full value chain (growers, manufacturers, traders, logistics managers, food companies, consumers, technology and service providers at both a national and international level)
Research priorities	Identification and feedback to researchers and research funding organisations on the priority areas for focus
Strategy formulation	Effective strategy formulation, decision-making, implementation, governance and control procedures are in place to achieve the desired strategic positioning of Australian grain products in international and local markets and sustain ethical and competent industry performance management and risk management

Strategic issues around structures

Australia's ability to deliver cost effective, robust and environmentally responsible solutions will depend upon its ability to apply broad research and development strategies to prevent reductions in profit, increases in costs, and reductions in price or uncontrolled fall-out from genetic transformation, soil degradation and inappropriate water use.

The **CHALLENGES** are in the areas of:

- efficiency of inputs, transport, improving land, water and capital yields aimed at reducing cost per unit of output, or increasing output per unit of input
- grain production capacity and overall farm systems capability
- assurance of health or environmental impacts of new technologies
- processing quality, including shelf life and lower wastage to match the increasing specification of demand
- lowering the price of supply of applicable grains against competitors through overall reductions in costs of the entire grains industry
- better intrinsic qualities of grain and specific grain-based speciality ingredients against long-term contracts 2005–2020 and beyond
- reduced foreign trade restrictions against Australian grain and encourage the development and take-up of new products in emerging grains industries
- industry value chain knowledge management systems to ensure there is industry wide access and awareness of grower needs
- ensuring the identification of emerging opportunities, risks and competitive business, industry, technology and production capacity to better allow growers and others in the various chains to access quality, transparent and timely knowledge. This will better allow the industry to identify and respond to opportunities as they arise
- plant breeding as a source of increase in productivity to achieve increased returns through better technologies to all participants in the Australian grains industry's value chains by producing grains better suited to these functions
- technologies for growing, processing, storage and handling, marketing and extension to ensure the overall efficiency of the industry
- reducing fragmentation
- early adoption of innovative policies and programs and wide acceptance of the need to consolidate policy issues (for example related to trade, competition, commercial and financial law, taxation, pricing, health, food safety, labelling and quarantine), and
- collaborative whole-of-industry approach to the creation of a position of global leadership through innovative, creative and entrepreneurial applications of foundation investments in research and development is needed.

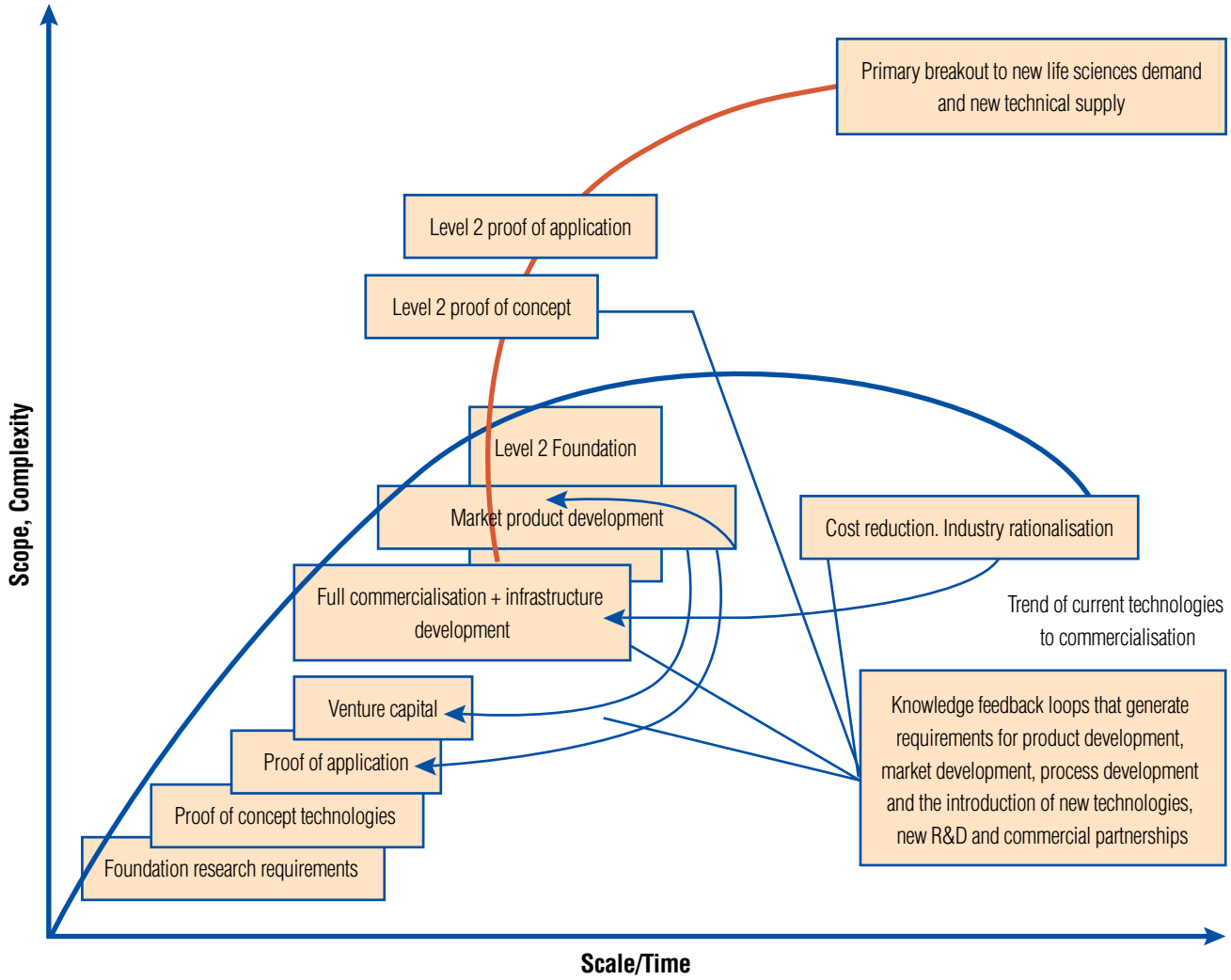
Achieving the full potential of expected demand for the 2005–2009 period will depend upon the reduction of fragmentation, consolidation of existing forms of industry organisations and representative structures, increased grower involvement and ownership at all stages of industry value chains.

Research and development

To acquire and sustain an international leadership position, Australia must anticipate the direction and rate of change and build a forward response capacity and relationships to match and exceed competitors in our response times for those changing conditions.

The GRDC will continue to provide a mechanism for open knowledge creation and transfer processes, business systems development and R&D investments required for rapid cycle responses faster than competitors for pre-commercial-in-confidence foundation and transition research.

Figure 6: ***The industry development and transition cycle***



Grains Business Forum

One of the factors that limit the ability of the Australian grains industry to react to market changes and other externalities is the speed of decision-making. Fragmentation of the 'grain producer voice' makes communication to the industry and from the industry confused, unclear and inefficient.

The plethora of existing organisations in the industry is unviable. The current cost to industry of these organisations is estimated to be between 2 percent and 4 percent of the gross annual value of crop production. Clearly this represents an unviable future and an unacceptable cost to the industry.

The many voices within the grains industry need to come together to align their common interests and develop a 'single vision' for the industry.

- Growers see current representation as fragmented, largely voluntary (and under-paid where there are professional staff), under-resourced and lacking political clout.
- Growers seek a professional, well-resourced advocacy body, deserving of an $8 billion industry, for which compulsory levy funding is broadly acceptable.
- Representation is required at two levels: (1) as a value chain wide body across all stakeholders, and (2) as a grower-producer body.
- The key purpose of a business industry forum is to discuss vision, strategic broad development and longer term direction of the industry in order to mobilise the industry on common issues.

To address these structural flaws, it is proposed that industry move rapidly to constitute a Grains Business Forum to speak to government and others using a 'Single Vision – Multiple Voices' strategy (see Figure 7).

What is meant by 'single vision – multiple voices'?

The Forum would be a collaborative agreement between:

- major grain grower representative organisations
- grain handlers and marketers
- organisations that act in the interests of producers, and
- other enterprises that support the Australian grains industry

The Forum would work against the framework of the Australian Grains Industry Strategy 2005–2025.

Forum partners would *share* a forward view of the Australian grain sector, agreeing to work together on issues of shared interests. This is the 'single vision.' The Forum will encompass a range of opinions and will embrace different viewpoints. By ensuring robust dialogue, the Forum will develop consensus within its membership.

The Forum process works most effectively when there are a range of opinions to embrace. The Forum doesn't require unanimity to work effectively to achieve the shared vision of the partners. These are the 'multiple voices' that will reinforce the direction of the Towards a Single Vision Strategy (see Figure 7).

Functions of the Grains Business Forum

The Forum would operate as a *peak-organising principle* for the full range of grains communities of interest and private enterprises dependent on the efficient, effective and committed operation of grains industry participants. It would not be another peak council with deliberative powers.

There are 'whole of value chain' models already operating that the Forum Partners could consider, including the structures employed by the Australian Oilseeds Federation or Pulse Australia.

The proposed Forum must seek to reduce the on-costs associated with intra-industry negotiations and the establishment and maintenance of international strategic alignments.

Composition of the Grains Business Forum

The Forum could be a company limited by guarantee/charter and underwritten by the major participants in the industry.

The Forum would need to establish a secretariat for managing the communication network that will facilitate the deliberation and consultation processes and coordinate the activities of the issues task forces.

This will enable the continuing dialogue between all sections of the industry to work toward the shared vision outlined in the Australia Grains Industry Strategy 2005–2025.

To compliment the foundation Partners, other organisations such as NACMA, AOF, Pulse Australia, Partners in Grain, grower cooperatives and other commercial organisations from the value chain, may become Associates of the Forum as they provide valuable linkages with growers and their communities.

The initial participants in the Forum would be the two senior executive office holders nominated by the foundation Partners. The Forum participants would be supported by executive staff from their own organisations and by the Forum secretariat.

The Forum would rely heavily on modern electronic communication to control expenditure and to increase the speed of observation, orientation, decision making and actions.

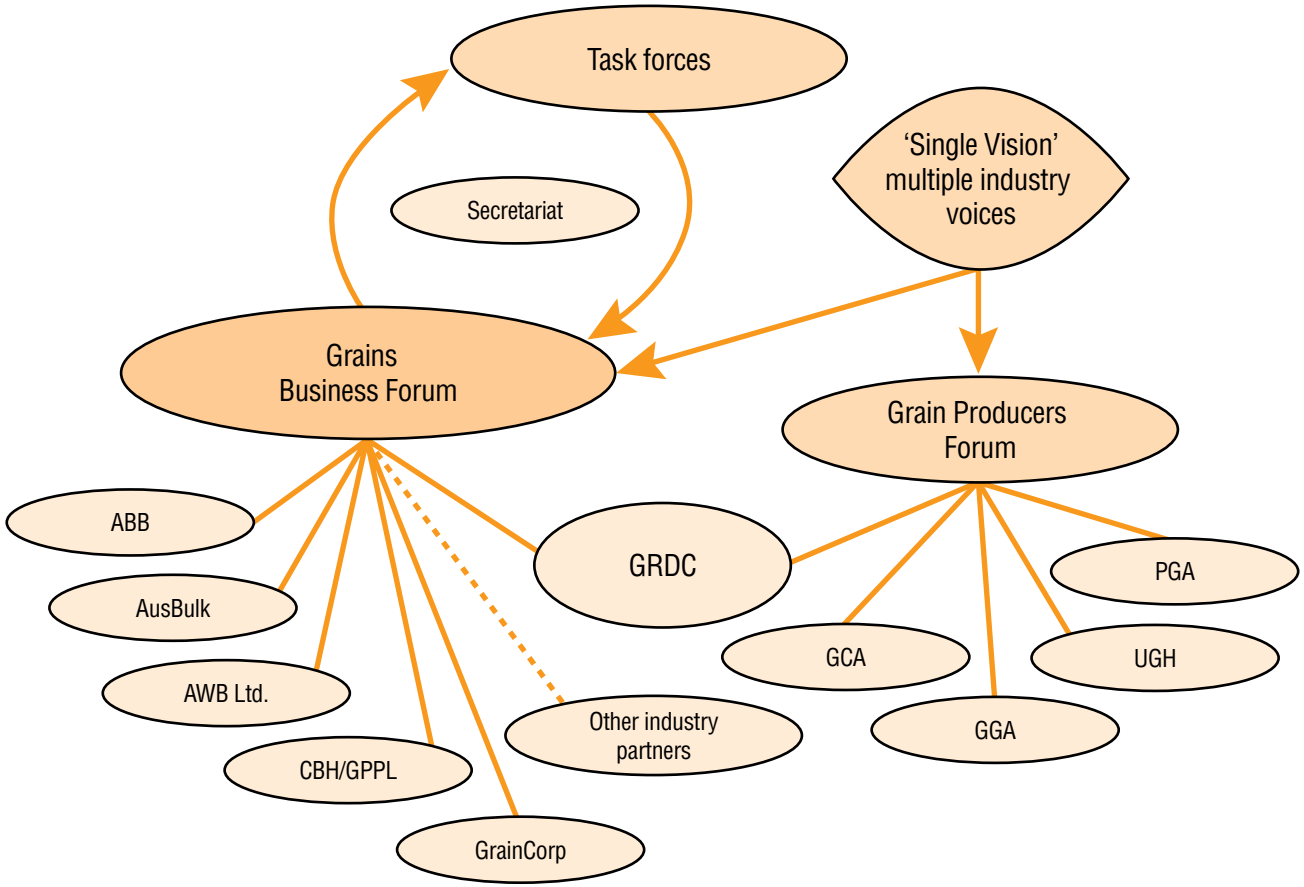
Composition of the Grain Producers Forum

It is imperative to the successful functioning of the Grains Business Forum that grain producers from all sectors of the industry are represented.

The 'politics' of current structures don't allow for the inclusion of all major groups into cohesive representation of producer's interests.
These 'politics' are at the core of the current representation fragmentation.

The formation of a Grain Producers Forum will allow voices from all production sectors to be heard in a non-deliberative manner, providing positive representation of producer interests into the full Grains Business Forum.

Figure 7: ***Grains Business Forum***



Task forces

The Forum could convene task forces, made up of seconded or appropriately qualified/experienced individuals and will be convened on a needs basis or in response to an emerging or emerged issue identified via the Forum.

These task forces would work to progress or resolve issues and report back to the Forum via the secretariat and/or via regular Forum meetings or events.

The task forces will be supported by the Forum Secretariat and will consist of:

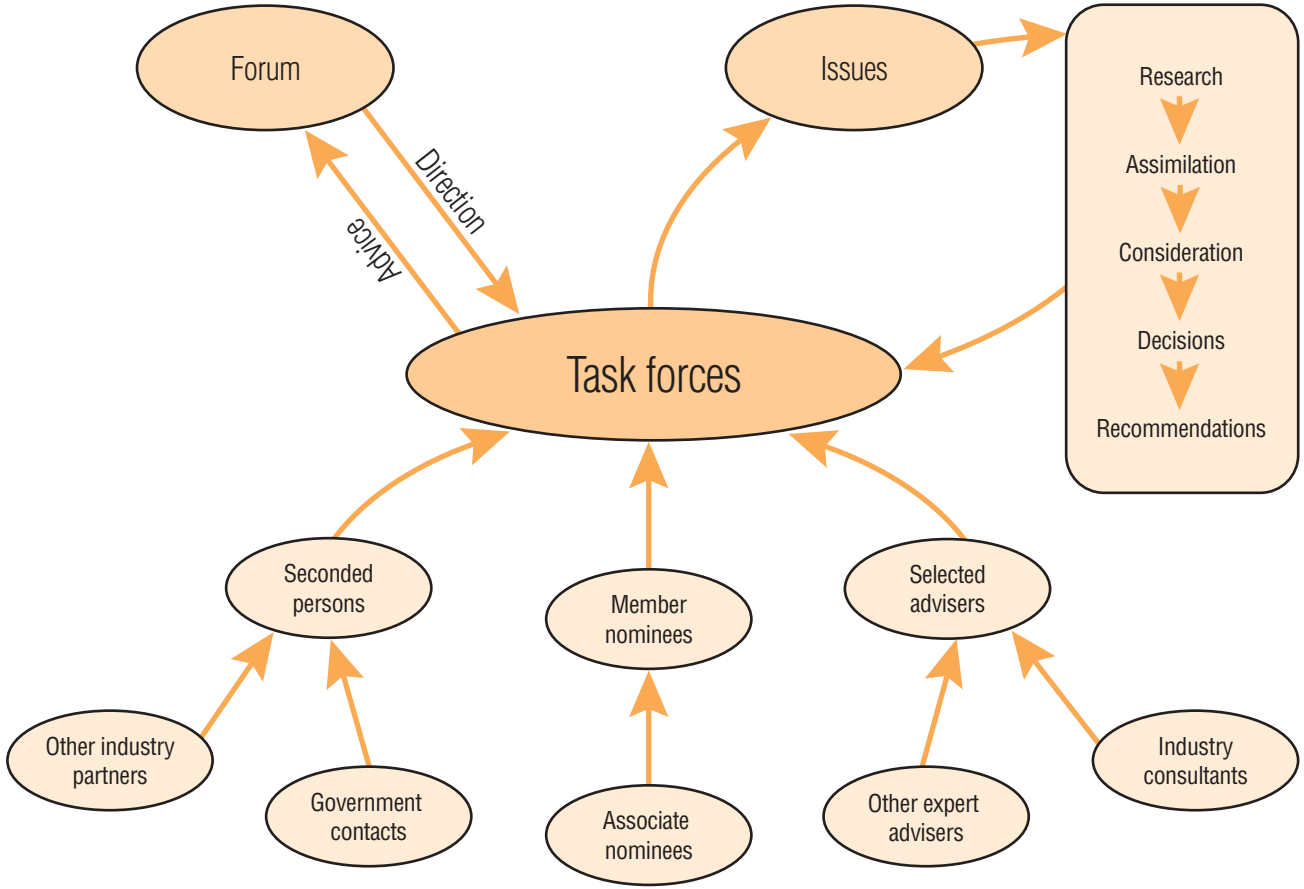
- permanent Forum partners
- seconded staff
- invited experts, and
- other participants where required.

As the task forces are effectively 'communities of practice', they will only be temporary, ending when the issue they have been formed to address has been dealt with to the satisfaction of the Forum members.

Task forces may be formed to address issues of common interest to Forum partners including:

- research and development for business growth
- infrastructure and transport issues
- grower communication and representation structures
- biotechnology and GMO's
- government/Industry relations and communication
- leadership capacity building and generation change, and
- environmental and sustainability issues.

Figure 8: ***Grains Business Forum task forces***



Scenarios for the grains industry 2005–2025

2005–2009

Assumptions for demand

Domestic market

Over this period, domestic demand for grains (human consumption) will be effected primarily by a health driven movement in diet that will increase the consumption of grain and decrease meat consumption.

The level of domestic demand anticipated for Australian grains is seen as between 22–24 million tonnes of cereals, assuming the highest level of domestic grains consumption.

Pulses through this time will remain at approximately 1 million tonnes and oilseeds will have a demand of 1.5 million tonnes.

There will also be an increase in domestic purchasing of Australian grain by multinationals for regional use. These purchases will either be pre-processed domestically or exported unprocessed for transformation offshore.

It is likely by the 2005–2009 period, that a quarter of current exports of cereals will be purchased domestically through agreed grain licences for reprocessing, rather than export through the orderly marketing operations.

It is also likely that Australia's export meat market will increase at approximately the same rate as the global market.

However requirements from China, driven by increasing levels of disposable income, may lead to high demand for feed grain exports, as Australia – China trade creates conditions favourable to agricultural exports to the region.

Export market

Demand in this period is likely to grow faster as trade conditions are liberalised, either as a result of multi-lateral trade reform or through bi-lateral trade agreements.

Export levels during this period are predicted to be

- From around 40–44 million tonnes for cereals
- 4 million tonnes for pulses, and
- 4 million tonnes for oilseeds.

However, import demand has been softening over time, particularly over the last two decades. With this softening in global import demand, there has been downward pressure on prices.

Research

The central areas of research will focus on identifying demand signals for specified long-term requirements for a range of quality assured, benchmark grains.

Emphasis will be placed on establishing environmentally and economically sustainable enterprises over the next five years.

Increasing the sophistication of market feedback to producers will require the development of information loops for market signals.

Australian **supply capacity** may also grow as higher yields are achieved through improved farming systems and production technologies

Supply issues

Research and development

Preparing the Australian grains industry for the increased demands outlined in the previous sections will require the industry to examine:

- the extent to which foundation research and development can be employed at all stages of the value/supply chain
- the extent to which transition research can be employed at all stages of the value/supply chain
- how improvements in quality and sustainability of the industry can be implemented in the following areas:
  - on and off-farm business competitiveness and productivity
  - trade and market development, including free trade agreements
  - communication along the value chain, and
  - use and availability of market intelligence.

Infrastructure

Significant upgrades in road, rail and port infrastructure and all aspects of grain industry logistics will also be needed if the industry is going to be able to meet future demand.

On-farm

Crop profitability and property enterprise management will have to include greater attention to:

- higher levels or more efficient and effective use of on-farm storage
- use of forward contracts to enhance risk management and minimisation, and
- adoption of farming systems focused on economic and environmental sustainability.

These strategic points will play an important role in achieving increased grower profit and enhancing enterprise competitiveness (measured in "yield per ha", per millimetre of water and return on capital committed to farm expansion).

A global perspective

The industry will need to have moved further away from the fragmented and isolated operations that existed at the end of last century.

The development of organisations and structures with the ability to deliver fully integrated, cost effective, robust and environmentally responsive supply is the key to meeting the demand scenarios mentioned in this document.

As markets develop, the demand signals they give will contain increasing demands for quality assurance procedures. Markets will demand that the 'where, what and how' of grain production/supply is known.

There will be a need for a significant increase in tactical advice in all sectors of the supply and value chains. This advice will have to cover product supply for selection of appropriate crop varieties, crop rotation planning and in particular, response to demand for international benchmark grains.

Environment and futures scenarios

Management of the environment and natural resource base is a major concern to producers in this period. They see this as one of the key drivers of farm profitability.

Good farming practice and good environmental stewardship are complementary and a key to prosperity.

Industry-wide collaboration will lead to the development of an effective dialogue to achieve multi-level sustainability and the application of best farming practices.

The industry will be building a leadership position as the "Green Continent" as a form of global branding of Australian grains industry supply to the world.

Farming systems will, however, still need to improve to increase yield per hectare and per millimetre of rainfall, if Australia's grain production capacity is to remain in step with increases in global demand.

Returns on foundation and transition R&D will need to double in this period to respond to environmental pressures, mitigate risk, facilitate farming systems integration, encourage plant variety diversification and identify opportunities for entry into new grains-related industries.

Two types of innovation will be required:

- problem-centred innovation
- mission directed innovation.

The former must aim to double the productive life of existing farms and production capacity.

The latter will need to identify opportunities for new grain production applications earlier than competitors to enable Australia to 'get to the future' first.

Innovating "sustainable prosperity" for rural areas offers a 'new economy' kind of industrial restructuring.

The 'new economy' involves creating and marketing innovations in the growing, handling, transporting, adding-value and consumption of grains and grain-based products, while simultaneously fostering ecological prosperity within this industry.

This will be achieved through the following means:

- achieving zero net collateral damage to the natural environment, particularly to the natural resources of soil, water, land, air and biota
- ensuring the long term productivity, sustainability and resilience of natural systems
- living and producing while avoiding contribution to climate change
- turning waste into food, producing zero net waste
- protecting and nurturing biodiversity
- contributing to the creation of sustainable and prosperous rural communities so that they can productively participate in the global marketing and trading systems, and through this acquire a 21st century industrial base and improved well-being, and
- applying the precautionary principle.

Three scenarios

The management of water issues will become increasingly critical. Three scenarios are likely, to emerge in the timeline covered by this strategy.

Each of the three scenarios reflects a different balance between a wide range of values and outcomes for Australian agriculture, the environment and society.

The scenarios are markedly different and the changes are spread over 50 years, with most rates of change no faster than those that have been experienced at some time in the past.

Water, water everywhere

This scenario recognises that rainfall is a vast and largely wasted resource for dry land agriculture and that more natural flow regimes are required to restore river and wetland health.

It sees a reduction of 11 million hectares (M ha) in the area of croplands and sown pastures in southern Australia through selective retirement of least productive lands, and 9 M ha expansion of cropping and intensive pasture production across northern Australia.

Better use of soil water and increased inputs lead to substantial increases in yields and crop production. A reduction of 40 percent in the area irrigated and moderate increases in water use efficiency see increases in environmental flows of more than 6600 Gl.

Dry land salinity and river salt loads continue to increase, but increases in environmental flows reduce salt concentrations and greatly increase river health in most stressed river systems.

Give and take

This scenario postulates substantial value in continuing to shift the emphasis of agricultural production from low-value, highly variable dry land production to high-value irrigation.

There is a 23 M ha reduction in the area of dry land crops and sown pastures, with 15 M ha used for forestry or being converted to native vegetation. The area under irrigation increases by about 2 M ha with just over half of this increase spread across northern Australia.

Water extraction in northern Australia remained well within estimated sustainable yields. In southern Australia increases in water use efficiency from restructuring of irrigation systems and renewal of aging infrastructure provide sufficient savings to supply the increases in irrigation and about 800 Gl of additional environmental flows.

The scenario sees substantial reductions in the rates of increase of land degradation, but river health remains an issue in many catchments in southern Australia.

Brave new regions

This is a scenario that recognises and capitalises on the diverse values people see in our landscapes, and seeks to take regional Australia beyond its dependence on "European" agriculture.

Under this scenario, the area of rainfed crops and sown pastures halves (to about 30 M ha), with 19 M ha revegetated for forestry and conservation; and, the area of irrigated land falls by 60 percent, providing 8700 Gl for additional environmental flows.

Farming systems on the remaining cropland are gradually redesigned to better suit Australia's poor soils and variable climate, leading to substantial decreases in land degradation and continuing increases in yields.

Despite substantial reductions in the area of most crops, production continued to exceed domestic demand by a factor of two or more for all commodities in this scenario.

A key component of this scenario is the development of new regional industries, including –

- Industries that add value to traditional agricultural products and to new industrial and pharmaceutical products
- Service industries supporting the redesigning of farming systems and
- Non-agricultural industries that are attracted by high amenity, low-cost work environments.

(*Excerpt from* Future Sustainability of the Australian Grains Industry, Dunlop, Turner & Howden, CSIRO Sustainable Ecosystems, February 2004)

Structures and administration

In order to maintain its leadership in emerging grain and intermediary industries, the Australian government and the grains industry will have to have established three major regional research foundations in Australia focusing on:

- product development
- cost reduction, and
- industry rationalisation.

These research centres will have to be members of global and international knowledge networks that will offer equity participation through intellectual property and intellectual capital royalty agreements.

They will provide:

- commercial foundation and transition research
- inter-industry brokerage of new technologies
- production capabilities, and
- new industry arbitrage.

Particular attention in this period will be paid to the identification and development of superannuation fund and producer funded off-shore production capacity.

This will dictate standardisation of the type of infrastructure and materials handling used to move, segregate and store grain and will allow the development of global branding and marketing of new grain derived products.

Second and third generation producers and specialist consultants will generate a secondary industry.

This secondary industry will be based around the dissemination of Australian grain industry expertise and will have a heavy focus on arrangements for equity participation in transnational and global markets.

At the same time, large scale off-shore production capacity will be purchased/managed by Australian based entities, requiring a partnership between producers, employees, agents and agronomists.

These types of operations will enhance the ability of the Australian industry to:

- compete with existing major global grain corporations
- become fully integrated into global food company supply/value chains
- enhance the value of Australian produced grains by taking domestic production 'up market'
- supply grain types for customers that cannot be produced in Australia
- increase the seasonal spread offered by Australian grain marketers, and
- offer a wider range of supply options to customers.

Assumptions for demand

Renewable fuels

Legislation pending in several countries has the potential of globally mandating a market for five billion gallons of renewable fuels by 2012. That roughly equates to two billion bushels of corn that could be pulled into fuels production.

Some commentators suggest that this new renewable fuels market can simply be derived from existing waste products. However across the entire grains industry there are only 78 million Mt of non-income producing waste in the world.

Therefore, to meet the proposed renewable fuel market, some of the new demand will have to be supplied from current income-producing grain or sugar (ethanol) product.

Within Australia, the target is to have 2 percent of transport fuel coming from biodiesel and ethanol by 2012.

Global trade policy

Through 2010–2014 the industry will be operating within a global trade environment significantly changed from the preceding decade. There will also be significantly improved farm yields and grain industry management in other parts of the world. Some current grain import countries may have become export players during this period.

These factors will have increased competitive pressures on the Australian grains industry, requiring a further 5 percent increase in productivity and a 3 percent increase in profit growth.

New commercial crops and emerging new uses

Foundation research

This will be essential for continuing to develop a deeper understanding of the core science that leads to the development of new commercial crops. During this period, gene technologies will begin to deliver consumer benefits (so called 'output traits'), leading to wider acceptance of natural and inserted gene technologies.

Crops, with higher yields per hectare, better grain quality, benefits to health and nutrition and more effective protection against pests, diseases and weeds will emerge.

However the incremental gains in crop yields of around 1 percent per annum, may not prove sufficient to meet the increase in demand for food and fibre from a growing world population on a diminishing land and water resource base.

Demand for grain

Demand for grain will increase significantly as a consequence of declining access to arable lands in Asia caused by increases in urban populations. These populations will have higher incomes and a greater propensity for consumption of both meat (especially China) and grain-based products.

The increase in domestic (Australian) purchasing by multinationals, for domestic pre-production processing and export of specialist grains (to meet emerging international taste and preferences) will have reduced the need for traditional grains marketing strategies.

Australia will have an opportunity to become a global leader in regionalised value chain purchasing and value adding.

Grain producers will have become focused on production capacity to meet new global markets by forming transnational strategic alliances. This will offer organised systems to monitor, participate and regulate grain quality through benchmark grades.

Demand signals for Australian grain will come through new corporate relationships and emerging industries for new users of applications of grain technology and grain ingredients.

Supply issues

If the industry is to match increasing global demands, the following will be required:

- the establishment of significantly improved capacities for the integration of region-wide farming systems to manage resources and risks, and to maintain production scale and scope
- establish new arrangements for farm systems management, cooperatives and strategic business alliance clusters to build critical mass for grain market 10-year forward contracts, and
- develop agreements with global transnationals, customers, suppliers, traders and strategic partnerships with research and development capabilities. This will allow access to emerging industries, for example, nutriceuticals, beneficial and functional foods, and grain-supplied specialist ingredients.

Producers will have to recognise the need to become the 'drivers' of the industry and operators of professional farming systems, both domestically and internationally.

This will require the building of a new generation of farm leaders.

Leaders will draw on applied science and strategic foundation research from the previous decade, with a focus on brokerage of new industry technology and productivity capabilities, societal audits, equity and access issues including:

- breeding programs
- investments in emerging new industries in food, health, feed and nanotechnology
- quality assurance, traceability and segmentation
- land value restoration, and
- plant diversification and resources.

Producer networks will have established links to research and development providers and research centres.

These producers will have early access to new products and production systems for specified benchmark grains from designated regions.

They will also have become 'quality assured' producers, closely integrated with relevant value/supply chains.

Farm owners will have to become more focused on acting as 'strategic leaders' and will require the elements from the following skill set:

- international trading and contract experience
- risk minimisation and management skills
- opportunity awareness
- the capacity to work with off-shore equity, and
- the ability to work with/within technology partnerships.

Environment and futures scenarios

The availability of arable land and the productivity of this land will continue to represent a significant constraint for on-shore (domestic) production.

Most of Australia's arable land will have been utilised.

A major effort will be directed towards the restoration of lands previously deemed unsuitable for cropping because of their climate, soils or topography.

Strategies will have been employed to address salinity, soil acidification, soil fertility decline and soil erosion.

Today, nearly 5 million hectares of agricultural land is already at risk of dry land salinity.

This has the potential to double by the year 2025, unless there are substantial policy shifts to address the management of streams, rivers and water tables.

Research and development investments in new industries that relate to addressing/working with salinity and acidification, will have generated a significant capacity for environmental monitoring, including:

- water resource management
- water use efficiency, and
- efficient farm eco-systems management.

As a consequence, Australia will become a world leader in grain product differentiation. Grain and grain ingredients produced to specific environmental standards will become common place.

Premiums may be available for grain that meets quality assurance requirements, traceability, and food safety concerns/requirements, either for specific customers or specific markets.

However, base prices may well be lower.

Global corporate supply chains will have formed, by consolidation and vertical integration.

Access to international markets through international grain cooperatives and grain processing (for food and feed) will have removed the problems of quotas, tariffs and non-tariff barriers.

Long-term supply contracts will be available.

Climate will remain the key determinant of the quantity and quality of the grain supplied:

- there will be some emphasis on controlling fertilizer production and use as governments seek to reduce greenhouse gas emissions from farms
- the industry may become involved in national greenhouse gas inventories and the management of carbon credits as an alternative national source of revenue
- at this stage it has become recognised that agricultural advances may have focused more on the management of production inputs for yield maximisation, rather than on a more integrated approach to natural resource management and agricultural production
- an opportunity may emerge to focus on regeneration of food-productive lands that can also serve native vegetation needs, retain cultural and community heritage, and
- producers may be encouraged to adopt new technologies and practices that can remain productive and also provide off-farm cultural benefits.

Assumptions for demand

Domestic requirements

2020 scenarios put domestic grain requirements at between 3 million & 4 million tonnes for human consumption.

The forecast growth rate in meat and poultry exports up to 2020 would double domestic feed grain requirements up to approximately 20Mt.

Around 6 percent of total grain production is used to create lubricants, starch and other products for the pharmaceutical and oil industries.

This is forecast to increase to over 8 percent by 2020 depending on the ability of the industry to supply required grain types and the development/adoption of new varieties and other technologies.

Export demand

Export demand in this period is expected to grow very strongly.

Potential demand for export grain is significantly greater than at present, up to 200–300 percent pending on various assumptions.

At the August 2000 national grains industry Search Conference, it was agreed that, by the 2015–2020 time frame, the long run productivity trend for the industry would be achieved by re-engineering the grains value chain and applying world best practices standards along that chain.

It was agreed the future industry would be grounded on a commitment to the triple bottom line – sustainable profitability, sustainable environment, sustainable community.

The key strategic priorities identified were:

- creation of grains industry vision, values and leadership
- implementation of a whole-of-chain productivity best practice
- environmental sustainability defined and built into industry best practice at all points in the value chain, and
- generation of a culture and structures to support innovation and entrepreneurship.

By 2015–2020 the industry was seen as having to share responsibility as a partner for natural resource management and regional community development.

The plans encompassing part or pre-processing grain for export mentioned previously, will become entrenched over this period.

Multinational food companies will continue to use Australia as a base for specialist food markets.

With this taken into account and only having spoken to 2 of the major pharmaceutical companies and 2 lubricant companies, this would add another 4–8Mt to the demand within Australia.

Currently, major multinational food companies have plans in place for centralising the buying and pre-processing of grains.

As an example, by 2020, just basing a projection on the current expansion plans of Kirin & San Miguel (brewers), 5Mt would be added to total demand.

This will provide the Australian grains industry with an opportunity to become highly integrated into the global food production value chains, in essence 'locking in' significant demand for high value returns to grain producers.

Supply issues

Major changes in government policies in this period will have finally achieved a dramatic reduction in tariffs and trade barriers, as countries struggle to gain greater access for their finished goods.

Coupled with changes in climate during this period, there will have been a steady increase in broadacre grain yields.

Improved photosynthesis, fallow efficiency and water use efficiency will have significantly assisted delivering consistently higher yield per hectare and per millimetre of rainwater.

A global competition focus will have allowed the industry to become a participant in global single desk alliances, allowing for long term contracts.

The establishment of strong foundation and transition research and development centres in the three major grain zones (Western, South-eastern and Northern zones) will provide a platform for the early adoption of entrepreneurial crops.

This has also allowed the industry to invest in off-shore production, using Australian plant varieties and gene royalty flows, to enable control of seasonality, quality and response to demand for unique or specialised grains.

End point royalties and voluntary farm levies will have become the source of major grain development systems in Australia and overseas. This will give grain producers access, not only to new technologies, but also to an equity involvement in global farming.

Identification of mix and match capacities between existing crop and farm management systems will have doubled overall production capacity on-shore and off-shore. This will facilitate a four-fold increase in supply capability to meet emerging industry requirements for food, feed and new industry grain-derived ingredient uses.

The adoption of horizontal and vertical supply/value chain alliances with transnational grain traders and regional farm groups will enable Australian grain producers to win long-term contracts and play a significant role in the specification of supply standards for their contracts.

Greater understanding of the impacts of increased global warming, carbon credits tariff reduction, quarantine standards maintenance and the efficient regulation of water use, will have reduced the number of full-time professional grain producers to below 10,000 enterprises.

Specialisation of farm production will be a direct response to the need to reduce the impact of seasonality in soil and rainwater-based productivity. Effective responses will have been developed for soil restoration to overcome structural decline, salinity and other issues.

Genetically modified crop production will be substantially controlled and directed through direct production and vertical integration and through long-term contracts owned and managed by transnational corporations.

There will be increasing grower resistance to the continued acquisition of arable lands by these trans-national corporations. This will precipitate development of defensive export and promotion strategies, particularly for on-shore production of bio-materials and grains grown for particular industrial markets.

The Australian grains industry will have established a leadership position in the Asian, American and European markets through its traditions, cultural heritage and neutrality and as a world leader in the development of new varieties of plants, plant derivatives and plant derived specialist molecules.

At the same time Australia will have developed an ability to respond quickly to changes in markets and consumer expectations, with a focus on consistent risk mitigation and appropriate environmental impact analysis.

Environment and futures scenarios

Opportunities

During this period the development of environmental quality assurance systems will have become increasingly important.

The production of new crops, including perennial crops and a diversified range of new grain-related products for the emerging industrial and pharmaceutical markets will have become more important.

Production systems will use more precision farming techniques, excel in water use efficiency and use redesigned farming systems specifically suited to the Australian landscape.

Risks

The major assumption for this period is that climate change will not reverse in the next few decades.

The one continuing and significant factor impinging on this scenario continues to be that of global environmental discontinuities.

The Australian Grains Business Forum will have adopted the ‘triple bottom line’ model as a defensive mechanism, due to the withdrawal of the Australian government in a regulatory role, other than in domestic water usage and external quarantine and migration control.

Environmental restoration, revegetation, environmental flow water diversion and utilisation of bio-diversity conservation policies, will enable the development of alternative industries for rural communities.

It will also allow of the redirection of marginal or inappropriate land use to more value-adding and commercial crop production.

Structures and administration

The Australian Grains Business Forum continues to provide leadership to monitor strategic industry risks.

The potential for the takeover of Australian production by global life-sciences multinationals, who dictate virtually all of the production capacity for grains (and many other food crops) is possible.

The Grains Business Forum (formed in 2004–5) will have ensured:

- early market intelligence
- development and marketing for new genotypes and new technologies, and
- the capture of a global grains industry consulting practice based on Australia's continental advantage through the three-zone research and development foundations (Western, South-eastern and Northern).

The reduction in fragmentation (from 2005) and increased trust across the industry will have allowed the industry to:

- reduce the threats to and vulnerability of the grains industry, and
- firmly established Australia as the preferred supplier of:
  - environmental restoration
  - risk mitigation
  - farm systems production technologies, and
  - leader in the emerging micro biology and plant variation industries of this period.

An agreed process for handling disclosure, confidentiality, risk mitigation and response, intellectual property and intellectual capital trading arrangements, carbon credits and the capacity to replace regulatory frameworks with shared and dynamic collaborative triple bottom line agreements will be in place.

These agreements have led to fully integrated regional resource management programs within Australia.

Cooperative levies and reinvestment of end-use royalties will allow for the establishment of three research foundations, who will become global leaders in the emerging bio-sciences area.

The now heavily integrated universities and specialist CRC's will have gained entrepreneurial freedom by increasing overall market transparency and developing 'break-out' technologies.

The Australian grains industry will act to bring together and formulate international corporate and regional cooperative single desks, with full grower equity, for multi-grain marketing and forward demand specification, especially in non-cereal and emerging industry applications.

These new corporate and regional single desks, will increasingly assume the role of governments in maintenance and access to intellectual property and intellectual capital databases.

They will also provide grower supply and support mechanisms, traceability and segmentation of grain production, distribution and marketing and the confirmation of global and environmental quarantine and safety standards, trade flows, sector regulation and grain production dispute management.

The emergence of global standard setting, ethical and performance monitoring strategic alliances, will have created competitive pressures for control over new and emerging industry foundations and the international research and development communities.

Research and development communities, established through the Grains Business Forum, will be concentrating on ensuring Australia's capacity to achieve the best three value positions for:

1. development of new varieties, crop production systems and environmental management capabilities,
2. nanotechnology and grain-based ingredient capacities, and
3. research into native eco-system regeneration and microbiological research interface.

Assumptions for demand

Key strategic points

After two decades of reconstruction, refocus and achievement of the triple bottom line objective, the Australian grains industry will have recognised the necessity to:

- increase flexibility
- become more adaptive, and
- develop a greater capacity for responsiveness.

This change will have been driven in great part by up to a 5 fold growth in demand for Australian grains.

This level of demand exceeds the potential of Australia to physically grow and supply grain. This level of demand also poses a major potential pressure on the long-term viability of an environmentally sustainable grains industry.

This will require Australia to shift some of its supply to offshore production of grains. This, in turn, will require a range of supporting operations and integrated global/local arrangements that will require as yet undefined relationships between a range of parties.

Knowledge management

Under these assumptions, the Australian grains industry will become able to leverage a range of 'knowledge services' including:

- experience in producing grain in difficult environmental conditions
- transport and logistics management, particularly across long distances
- the application of marketing knowledge
- development of 'benchmark grains', and
- use of best-practice farm systems to enhance economic and environmental sustainability.

These 'knowledge services' will add considerable value to the sector and will place the Australian industry in a strategically advantageous position when dealing with the logistic and supply issues presented by the emerging cities, mega-cities and urban populations of the world.

Industry demand will have shifted from a focus on the domestic production to the production of appropriate, sustainable grain production capacity around the globe.

Australia will also have become recognised as a global supplier of resources for agricultural innovation programs, ecologically sustainable catchment management and grain supply systems.

Australia will also have developed a sustainable position in the production of differentiated, beneficial or 'functional' food products that will be positioned in the top decile of global consumer food markets.

Research and development

A focus on bio-prospecting for alternative crops and the development of new crops will have become apparent by this time.

By this time it is expected that 'global warming' will have become more apparent, dictating the use of crops that are more appropriate for production areas impacted on by the greenhouse effect.

The sequestration of carbon dioxide by food and feed crops will have also become a factor in grain production and a consideration for plant breeders and biotechnologists.

Supply issues

The investment in development of alternative industries will have enabled Australia to become a world leader in the creation of sustainable regional communities and play a significant role in the global production of benchmark grains and specialty ingredients.

Australia will be a leader in technology transfer and supply/value chain integration, as well as being the first global producer and marketer of grains.

This will be achieved through its position as a producer and marketer in several countries, allowing Australian-controlled organisations to become a supplier of choice to a range of high value markets.

Environment and futures scenarios

By the year 2025, the grains industry contribution to climate change will be zero, as it will have adopted a range of technologies and practices that will address many current and future climate change problems.

The capacity of the industry to provide climate-adaptive responses to environmental variations in solar/water/soil productivity, will give it the opportunity for leadership in new industry formation and social/economic development.

Australian grain producers will be gaining maximum returns from new industry intellectual property and intellectual capital investments made in the previous decade.

Producers will have increasing participation in delivery of sound production processes, reliable quality and quantity supply, effective marketing and active involvement in distribution and demand management.

Achieving these major transformations relies upon Australia's foundation research in the previous decades to deliver innovations in:

- water efficiency,
- improved above and below ground farming systems,
- integrated genetic and natural plant modification processes,
- bio-monitoring, and
- response capabilities and capacity to fully integrate whole of farm, whole of region and grain systems dynamics capabilities.

The most critical change in grain industry development in the next three decades requires foundation research into:

- restoration of land and natural vegetation capacities
- increase in soil organic matter levels
- soil structure improvement/maintenance/repair, and
- soil nutrition and water (rain) management.

Australia's environmental response over the next two decades will be to seek to lessen the contribution of agriculture to global warming through world's best practice in:

- crop management
- waste management
- water management, and
- rural community management in a world that is increasing urban and concentrated in growing cities.

Structures and administration

The early formation of the Grains Business Forum (in 2005) provided an interface for micro management of:

- environmental inputs
- recognition of the potential for new industries, and
- an establishment of a 'whole of industry' communication process that reduced fragmentation.

The formation of three on-shore and a fourth off-shore 'Foundations for Sustainable Grains Research and Prosperity' will enable Australia to position itself to maximise a four level sustainable prosperity proposition with four key crop positions:

1. higher than average quality grains at lower than average prices
2. leading edge biopharmaceutical, nutriceuticals and other specialised grain ingredient production
3. sustainable agricultural production capabilities with world's best practice yields per hectare and per millimetre of rainfall utilised in production, and
4. offshore grain production and best practice farming systems, processing and grain services, managed by Australian grower owned joint ventures and strategic alliances.

The demand and supply equilibrium in emerging industries and new technologies, will be managed by professionals who will work closely with supply/value chain partners – who will be based both domestically and internationally.

The emerging industries, driven by investment decisions and priorities made in the 2005–2015 period, will be fully functioning and a global leader in scale, scope, geographies and knowledge dissemination.

This leadership will be based on the competence and experience of grain producers.

The Australian grains industry will have become much more integrated and efficient than in 2005.

It will have a global orientation and a focus on the adoption and development of grain technologies and value chain management.

The industry will use its developing strategic expertise to build a series of rolling contingency plans that will allow the industry to more effectively analyse and identify opportunities in emerging markets and profit from its knowledge management skills.

Future perspectives – Stages of implementation of the Australian Grains Industry Strategy 2005–2025

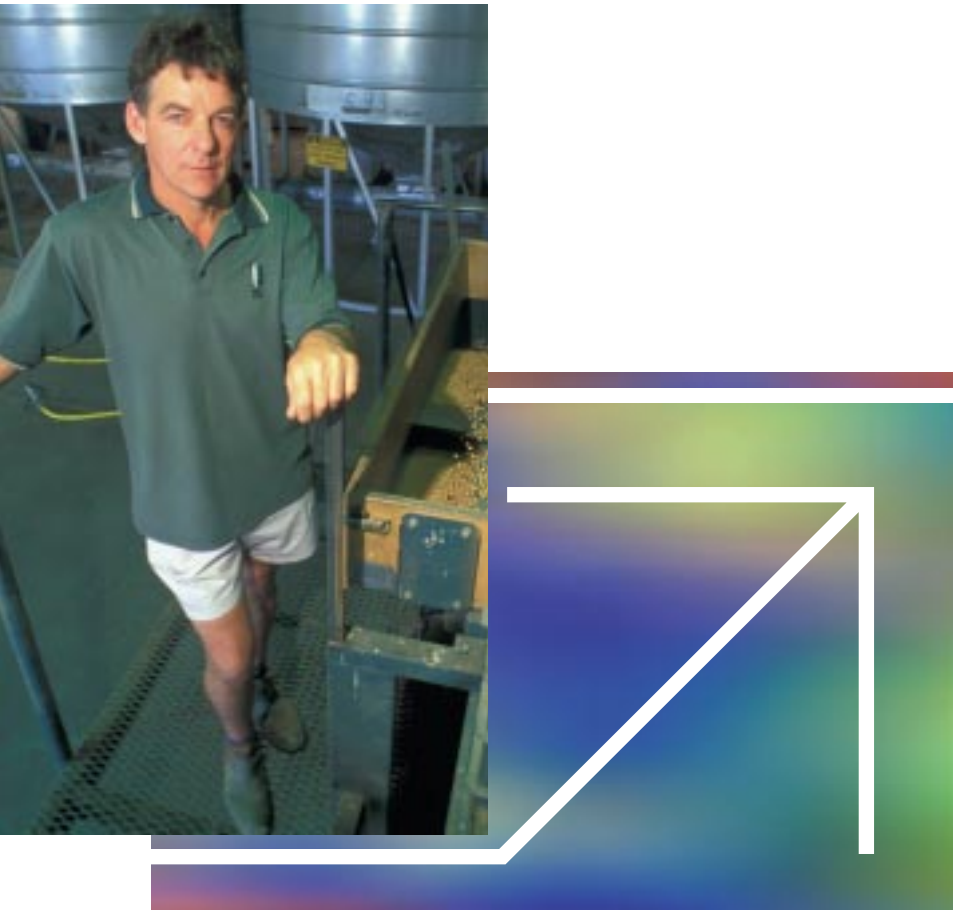


Table 6: ***Industry Strategy 2005–2025***

Futures timelines	Foundation researchers
2005 for 2009	Platforms for growth
2010 for 2014	Become leaders in application science and strategic foundation research
2015 for 2019	The development of relevant and targeted skills and leadership programs to the various industry constituents and the establishment of global partnerships with agribusiness, grower groups and other R&D providers
2020 for 2025	Interfaces between industry and various types of grain products and sources of R&D to move from paddock to plate to particle and process (life sciences, bio-sciences, bio-materials nanotechnology)

Australia's ability to deliver cost-effective, robust and environmentally responsible solutions will depend on how effective it can apply broad research and development strategies.

	Global marketers and grain industry associations	**Industry giants (eg processors/bulk handlers)**	**Professional bureaucrats and specialist retail advisers**	**Organisational representatives and product/technology, suppliers/advisers**	**Growers and specialist advisers – fee for service professionals**
	Consolidation of source to lower access costs	Competitive terms of trade, continuity of supply	Risk management of the links in the chain, with no surprises from the industry	Relationship based loyalty, service opportunities, investor access	How to capture share of the new sources of demand and industry support to do this
	Inter-city suppliers for new industries and new industry roll-outs	Risk mitigation, supply standards and continuity. Distribution investments and land management	Brokers of new industry technology and productivity capability, societal audits, equity and access issues	Entrepreneurs of the new industries – arbitrage the future	Identify and develop off-shore, multi-regional production bases/alliances
	Consolidation of packaged access to leading edge grain production capacities, grain technologies and processes of production, distribution exchange for the global grain industry	Strategic partnerships with local grain grower and farm systems managers for early identification of forward demand, risk notification and response and priority negotiation of trade, quality assurance and benchmark standards maintenance	Intellectual property and intellectual capital access to private industry and private contract requirements in respect of yield management, sustainable development and farm systems maintenance requirements for emerging industries	Consolidation and collection of local area knowledge, intellectual capital, environmental constraints and direct involvement in farm grower groups to transmit industry performance to increase return on investments in innovation for the greatest benefit of all stakeholders	Development of specific farm practices changes, land use applications and development of formal succession planning for maximal utilisation of current capital assets allocated within the industry
	Doubtful – replaced by mega-city marketers	New industry managers and the determinants of future grain requirements	Regulation of competency and risk mitigation and generate the skills base for the industry giants	Interface/transmission and transformation of knowledge about new grain requirement	Micro-management of environments, inputs and contracts against tight specification – becomes industry investor

Table 7: Foundation researchers

Foundation researchers	2005–2009	2010–2014	2015–2019	2020–2025
Administration	Consolidation of Foundation research requirements, identification of key technologies and manpower/ education bases for capacity.	Have leadership in the three areas of demand based R&D: • Pharmaceuticals and nutraceuticals • Benefit and functional food • Benchmark grains • Fractionation	Consolidation of rural research, industry research and bio-science research to provide bio-science platform for new industries	Reconstituted strategic investment in the four zones of sustainable prosperity
Entrepreneurship/ market development	Develop and consolidate current and university CRC foundation science and ag-extension capabilities to ensure a 'fibre optic cable' market intelligence transmission capability from and to grain growers at local, state, regional, national and international levels	Equity development agreements against specified research output	Identification of mix and match capacities between existing crop and farm management systems with emerging industry requirements for food, feed and new industry grain fraction uses. Heavy integration with universities and specialist CRC's to commercialised and applications-based research and development	Identify emerging opportunities for grain production for new industries
Integration	Identify appropriate R&D investments and external capacity to generate leadership in the Australian Grains Industry	Global and international knowledge networks and research alliances	Strategic investment with global marketers and industry giants to develop the new and emerging industry foundations and the international research and development communities of interest, in particular in relation to: 1. Development of new varieties, crop yields and environmental management capabilities 2. Nanotechnology and grain fractionation capacities 3. Research into native eco-system regeneration and micro-biological research interface	IP brokers and IC organisers, tacit to explicit

Table 7: ***Foundation researchers*** *(continued)*

Foundation Researchers	2005–2009	2010–2014	2015–2019	2020–2025
Output/outcome grain production	Increased grower profit and competitiveness measured by "yield"/ha, per millimetre of water, return on $ invested and environmental sustainability	Strategic leaders, with international Best Management Practice (BMP) experience and risk/ opportunity awareness	The development of new varieties of plants, plant derivatives and plant fractionations to generate Australian leadership in grain industry development. Focus on inter-industry linkages between food, feed, industry, plant based decision systems	Equity in the returns from IP/IC residuals/patents engaged in those new industries
Understanding knowledge and competency/ capacity and capability	Investment model that allows identification of the contribution to the industry of each of the industry sectors	Research into the requirements for • Breeding programs • Increased infrastructure • QA/segmentation, and • Decreased costs	A capacity to deliver products and services to growers in support of their business objectives and relationship management in the research and development industry to build, lead and manage Australian grain leadership	Regeneration of lead capacity and required capacities and generate/ provision of requisite variety competencies of the new industries

Strong global demand for grain and grain products will create an opportunity for Australia to choose which demands it will meet – which markets it wants to supply.

Table 8: Global marketers

Global marketers	2005–2009	2010–2014	2015–2019	2020–2025
Administration and structures	Build linkages through the value chains for simplified business development and relationships	New corporate relationships through emerging industries, intermediaries for new users applications of grain technology, grain ingredients	Consolidation and coordination of supply and demand chains on a regional scale both domestically and internationally	Feed forward, feed back "what to grow at $?"
Entrepreneurship/ market development	Develop new market-serving methods – rapid feed forward and back loops Price signal transparency	Infrastructure and technology, partnerships and supply alliances	Negotiation and specification of demand requirements beyond the productive capacity of Australia to act as market intelligence suppliers for entrepreneurial discovery	Advanced warning of transitions and risk mitigation
Integration	'Track and trace' access to grain, know where and what quality	In-house brokerage and contract management capacity	Vertical integration of production technologies with geo-communities of interest in plant variety around the world to assist in the knowledge management and market access to variety and productivity improvements in grain handling technologies	Integration via market exchange which is the only source of market signals
Output/outcome grain production	Access to tomorrow's harvests, lower cost of purchase and quality assurance	Regionalised (globally), systems integration logistics integration, whole of value chain purchasing	Development of extensions into other grains, farm systems and rural processing systems to ensure continuity of supply	Global management of regional markets, sustainable and competitive grain contracts
Understanding knowledge and competency/capacity and capability	Cost and impact on delivered price of storage/rail/road/ transport and farm cost management costs for segregated traceable grain	Increase revenues, decreased costs and new investments in food, health, feed, emerging new industries	Development of marketing and entrepreneurial capacity for new genotypes, new technologies and industry market development of sustainable farming systems against forward grain contracts	Manage demand for grain-related material/ knowledge across urban boundaries and intra-regional catchments

Table 9: Industry 'giants' – processors, bulk handlers, etc.

Industry 'giants' (eg processors/bulk handlers)	2005–2009	2010–2014	2015–2019	2020–2025
Administration	Identification of best strategic positioning for grains and markets for each region Strategic positioning of Australian grains WA v South East v North = regional grouping	Level 2 foundation research focused on product development, cost reduction, industry rationalisation	Commercial single desk purchasing on 5, 10 and 15 year contracts with regional hub for Asia centred in Australia	"Pure" market for matching demand and required supply (future)
Entrepreneurship/ market development	Identification of emerging industries and investment in new infrastructure (and impediments to this) to allow productive solutions to major issues	Managing the new global markets: • Asia • Europe • Americas	Horizontal and vertical integration through long term sustainable contracts and specification of supply standards for their contracts	Control of emerging industries and new technologies
Integration	Demand signals for specified, long term requirements by quality grade, QA	Regionalisation (city-based) purchasing networks leverage. Also trade liberalisation – partners replacing governments "set-the-rules" – vertical integrators	Formulation of corporate and regional single desks for multi-grain marketing and forward demand specification, especially in non-cereal and emerging industry applications	Cross industry integration (food, health, bio, life sciences…)
Output/outcome grain production	Large quantity of appropriate benchmark grain types, lower storage and transport costs	Become the new "owners" of the industry	Vertical integration of access to GM based production and GM variation risk mitigation processes	Industry long term contract facility against return on capital
Understanding knowledge and competency/capacity and capability	Long term supply arrangements of grain products at known costs to allow trade-offs between alternate sources	Multi-supplier competition, standardisation of infrastructure and materials handling and global branding and marketing of the new products	Identification of geo-regional, macro-environmental production constraints against emerging awareness of diagnostic and decision support requirements for crop protection. Challenges identified in the different agro-ecological zones and the establishment of collaborative approaches to early adoption of new technologies, enhanced grower profitability and investment in chain alliances in joint ventures	Control the supply of the ingredients and substitution in production

Table 10: Professionals and bureaucrats

Professionals & bureaucrats	2005–2009	2010–2014	2015–2019	2020–2025
Administration	Understanding of impediments and inefficiencies in industry structures and information flows.	Partnerships and agreements in place with the new technology developers and researchers, risk assessments, audits of new technologies	Integrated total regional resource management programs for environmental restoration, revegetation, environmental flow, water diversion and utilisation and bio-diversity conservation	Mechanisms required to match emerging demand
Entrepreneurship/ market development	Points of leadership and funding investment opportunities for knowledge transfers	Transnationally organised systems to regulate and participate and monitor	International trade negotiation, tariff reduction, barrier removal and quarantine/standards maintenance. Regulation of water usage and irrigation substitution from South to North Australia	Management of standards and time scales, regulation/flow of knowledge and product
Integration	Broader based advice plus network of the best – resources ($/IC) for field extension	Administer the flows and monitor quality assurance	Confirmation of global and environmental quarantine and safety standards, trade flows and business exchange requirements/ sector regulation	Segmentation, traceability, flow control, access to financial modelling and triple bottom line evaluation
Output/outcome grain production	Ability to deliver cost effective, robust and environmentally responsible solutions to issues of crop production and lower cost of infrastructure storage and port handling	Promoters of equity and access and benefit from the emerging product range	Identification of environmental impacts, energy requirements, including carbon credits, regional development frameworks, pre and post production factors and management of the globalisation of trade and demand	Professionals – manage and allocate enterprise resources. Bureaucrats – QA/regulation/ distribution
Understanding knowledge and competency/capacity and capability	Early access to likely new technologies in future new uses/ demands and production technologies and developing opportunities, risk management	New industries – standards, single desk strategy for each new industry, management of related party transactions	On-going endorsement of Ministerial and government and global corporate agreements to meet compliance standards, risk mitigation controls and establish monitoring and audit provisions for targeted, sustainable on-farm practices and technologies	Regulation of competency and risk mitigation

Table 11: Organisational representatives and product suppliers

Organisational representatives and product suppliers	2005–2009	2010–2014	2015–2019	2020–2025
Administration	List of priorities of interest researched to identify highest opportunities for growth.	Networks will have links to R&D to ensure they have a "product" to position with growers, act as a gate keeper and have some equity	Development of alternative industries and the redirection of marginal land use and inappropriate land use to more value adding and commercial crop production	Arbitraging opportunity against risk analysis and return
Entrepreneurship/ market development	Tactical advice and product supply for crop rotation planning	Specialist hired guns – teaching or moved onto new farms and strategic partnerships	Development of consultancy and networking arrangements for the new production-based business systems	Have inside knowledge and early access to market change
Integration	Packages of crop based information/technology Training in extension and group facilitation, network of advisers	Move to become employees/ agents/consultants for global industry requirements	Maintenance and access to intellectual property and intellectual capital databases for transition and transformation, community and grower support mechanisms	Central knowledge data bank, control/manage and standards enforcement
Output/outcome grain production	Verifiable, independent information and products for delivery	System maintenance, 'mechanics' of the industry	Expansion of capacity for strategic alliances and joint ventures with emerging farming systems groups and global marketers to develop local and regional capacity for farm transition and farm transformation investment requirements	Risk mitigation and intra-industry trade-offs. Involved/advisory. Insurance/merchant banks
Understanding knowledge and competency/capacity and capability	Basics behind crop production and technology packages and what new services they should be getting into	Move to become retail distributors of new technologies, investment advisers and property speculators	Assessment of innovation and flexibility in contractual relationship development with growers, business partners and the development of strategic alliances and networks	Negotiators of inventory management and on-farm trading

Table 12: Growers and specialist advisers

The grower and specialist advisers	2005–2009	2010–2014	2015–2019	2020–2025
Administration	Sustainable farming systems, market signals, risk mitigation, new industry opportunities, triple bottom line to quadruple bottom line	The Grains Business Forum will have specialist chapters to: Opportunity alertness, lower transition costs and negotiating capacity	Clear access to a full range of choices by location	Clear access to a full range of choices by location, including overseas-based production
Entrepreneurship/ market development	Crop profitability ad property enterprise and assistance for succession planning and what does the future look like	New arrangements of growers or co-operatives/clusters emerge to negotiate participation in new global markets and build critical mass	New enterprise options and equity in these	New enterprises developed and scoped
Integration	Take from the Pulse Australia model of crop focused support Benchmarking and financial performance	Integration of whole regional farming systems to manage resources, reduce the risks and maintain scale and scope	Project management/whole of farm integration of enterprises in industry	Integration of new sources of production and enterprises
Output/outcome grain production	Optimised returns under changing environmental or market expectations (returns = net dollars per crop, $ per hectare and property value)	Become professional operators of farm systems, domestically and internationally	Property manager of grain production sites/regions and range of grain enterprises	Equity position established in production sites/regions and range of grain enterprises, local and overseas
Understanding knowledge and competency/capacity and capability	The ability to change what they product in response to demand signals and diversification opportunities/risks, solve GM issues, begin succession planning	Purchase and invest in specialist knowledge providers plus farm management and enterprise management advice	Differentiation of grain within a demand/supply specification, through yield and quality management (branding)	Supply of branded grain and products for new industries on a global scale

Conclusions and recommendations

Opportunity identification

Effective processes must be put in place to support development of industry markets, leadership, technologies, products, knowledge management, infrastructure, communication systems and processes.

There is an emergent opportunity, assumed to be possible by demand players in the light of the likelihood of lessening trade restrictions and subsidies, to further consolidate buying into key regions where world grain needs can be purchased domestically and via contract from areas where their quality specifications can be readily met.

Emerging markets such as those in China and Northern Europe will require specialised task forces and field trade teams to provide whole-of-industry solutions to emerging markets to maximise Australian grain industry equity.

Industry issues

To acquire and sustain an international leadership position, Australia must anticipate the direction and rate of change and build forward response capacity to match and exceed that of our competitors in our response cycle times to those changing conditions.

On this basis the Australian grains industry must become an integrated, globally-oriented, value chain managing system that acts in close alliance with its own and other global grain and grain technology derivative industries. It will need to build a series of rolling contingency action plans that seek out opportunities to benefit from emerging market and knowledge management boundary conditions (points at which key factors are changing levels of impact).

Industry structures and representative bodies

The highest priority is the provision of an effective industry forum for dialogue along the five value chains (demand, supply, title, knowledge and communication, community) with effective prioritisation processes and trade-off analysis for industry priorities and the allocation of discretionary knowledge and physical resources.

By the end 2005, the recognised leaders from the current industry bodies will be encouraged to take part in the formation of the Australian Grains Business Forum.

This Forum will be limited by charter and rules established through the Australian Grain Industry Consultative Committee after consultation with all State and Federal government authorities associated with the Australian grains industry.

Risk

It will be important for the industry to move from a focus on opportunity risk management based on current production/bio risk analysis to a forward oriented leadership role in global life science development and the adoption of world best practice and leading whole-of-farm systems.

The interconnections throughout the global value chain mean that grains are a link in any potential chain of risk, from laboratory plant technology to food products.

The risk to the grains industry, and to the Agrifood industry of which it is part, are the devastating almost instantaneous spread of for example, foot-and-mouth or a transgenic crop rust, with potential impacts all the way to the end of the value chain and the consumer.

Public and governmental perception is that the agriculture and food industries are the point of exposure to these new technologies, and will hold the industry to account for failure to avoid harm.

The industry needs to be aligned on this issue of risk, be able to coordinate contingency plans, and must speak with one voice. Communication will be as important as many actions.

Early identification and warning will be essential. All of these require preparedness on a whole-of-industry basis, readiness to face the almost inevitable crises, and pre-positioning with the public, regulators and government so that when the grains industry does speak it is listened to with confidence and trust.

The industry must make a thorough assessment of the impact of environmental management systems and other potential new regulatory or social pressures on growers in the production cycle of what and how grain crops are grown. Issues of long-term industry leadership, succession on the family farm, retention of community infrastructure and declining household incomes for the majority of older agriculture industry employees need to be addressed as part of the Australian grains industry strategy.

A detailed analysis is required of environmental issues that may be impacting on grower systems of production in the future.

The knowledge chain as a key driver of value

A critical aspect of effective processes and systems of this nature is that information that is pre "commercial in confidence" is freely available in a timely way to key industry participants, particularly growers and researchers to create generative growth options.

The rates of change in the periods 2005 to 2010 are likely to be so great that a major proportion of the knowledge will need to be acquired and transferred in real time.

The interviews and research process indicated that development in the Australian grains industry closely follows the form of the Industry Development Map identified in the Global Life Sciences Forum in 2002 (see page 44).

This Industry Development Map indicates the key transition points in the industry and shows the progression from foundation research through transition research phases to early and developed commercialisation. It also highlights transformation processes to replacement technologies.

The global grains industry is moving rapidly towards a major transition to Life Sciences based demand and technologies within the 2010 to 2015 time period. To be a global leader in key aspects of the above transition, Australia will have need for adequate foundation and transition research focused on those priority areas determined by the industry between 2005 and 2010.

Research in this project has determined that to at least 2010, the highest impact on value creation throughout the entire value chain will be the performance of growers.

This, in turn, depends on their access to critical demand, application and processing requirement knowledge and information, and to appropriate farm inputs, especially appropriate varieties in a timely fashion.

The research program indicated government expectations that commercial interests would provide the funds required for foundation and transition research at sufficient levels, and in a timely way, are unlikely to be met.

These areas of research do not attract significant research funds from commercial interests anywhere in the world and interviews with both local and international grains industry and life sciences investors confirmed this position. Funding for these types of research and development tend to be government or industry funded as part of the tertiary education infrastructure or through industry levy assigned to pre-commercial or early commercial research and development organisations or institutions.

For Australia to have an internationally competitive and sustainable grains industry there has to be a major focus on establishing the appropriate scale and scope of foundation and transition research base and a suitable process for funding it.

Recommendations

It is recommended that the Australian grains industry adopt a strategic decision making process based on the Observation, Orient, Decide, Act model for fast and competitive industry performance:

(i) **Consolidation of the market intelligence signals** for both the demand and supply value chains to integrate on and off-farm information in response to unfolding environmental and market forces.

(ii) **Construct well-informed, fast moving decision support systems** for growers over four strategic time cycles that enable them to be internationally competitive, sustainable and environmentally sensitive sources for benchmark grains and grains industry technologies.

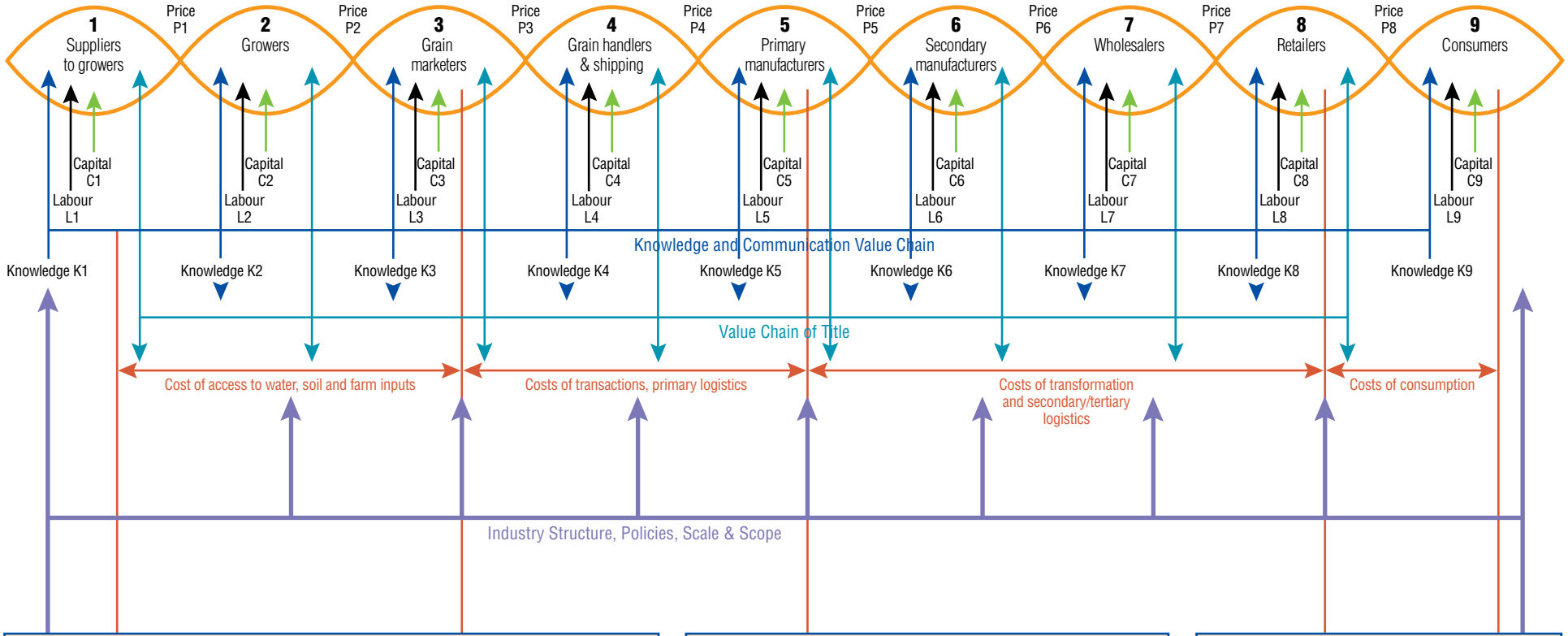
(iii) **Confirm Australian growers as world leaders in multi-location, cross seasonal, preferred grain varieties and genetic resources** for the continuous, sustainable supply of grain industry applications and new technologies.

Most critical gaps

- Lack of consistent and aligned leadership in the industry to increase long-term viability and reduce fragmentation and overlapping representative costs to growers.
- Agreement to operate on a demand responsive, rather than supply driven industry basis.
- The potential contraction of rural communities and current grain industry infrastructure is likely, as neither appear viable or sustainable beyond 2010.
- Dramatic requirements for foundation science and research as the critical input to any long term strategic capacity, including an enhanced knowledge management system that gives growers immediate, transparent access to market signals and intelligence.
- The need for a timely and critically integrated research and development migration pathway from foundation research to international commercial production agreements. This requires urgent attention.
- The current information and knowledge creation and management process does not meet the requirement for “the producer to be the fastest learner” to deliver the highest value throughout the value chain. New open system information and knowledge management pathways need to be created by 2010 to support this requirement.
- Investment in communication and education for intergenerational transfer and succession will be a limiting factor and constraining variable along with more traditional water, soil and farm system constraints.
- Shipping, handling and international buying integration through global cartels and multinational companies will shape the degrees of freedom open to the Australian grains industry from 2010 as governments reduce their regulatory and protective intervention as part of the World Trade Organisation (WTO) and Free Trade Agreements (FTA’s).
- The emergence of new sources of demand to compete with current purchasing and demand value chains in the bio-sciences, bio-fuels, health related life sciences, as well as emerging value creating ag/service industries will over-shadow physical grain production as an industry opportunity in the rapidly growing cities of the Asia Pacific Region.
- By 2015 the biggest single strategic forces for change will emerge from off-shore production and ownership by Australian grain growers and on-shore competition for grain supply from deregulated imports responding to demand shortages.

Appendix One

Figure 9: ***Australian grains industry – value chains, capital, labour, knowledge and environment***



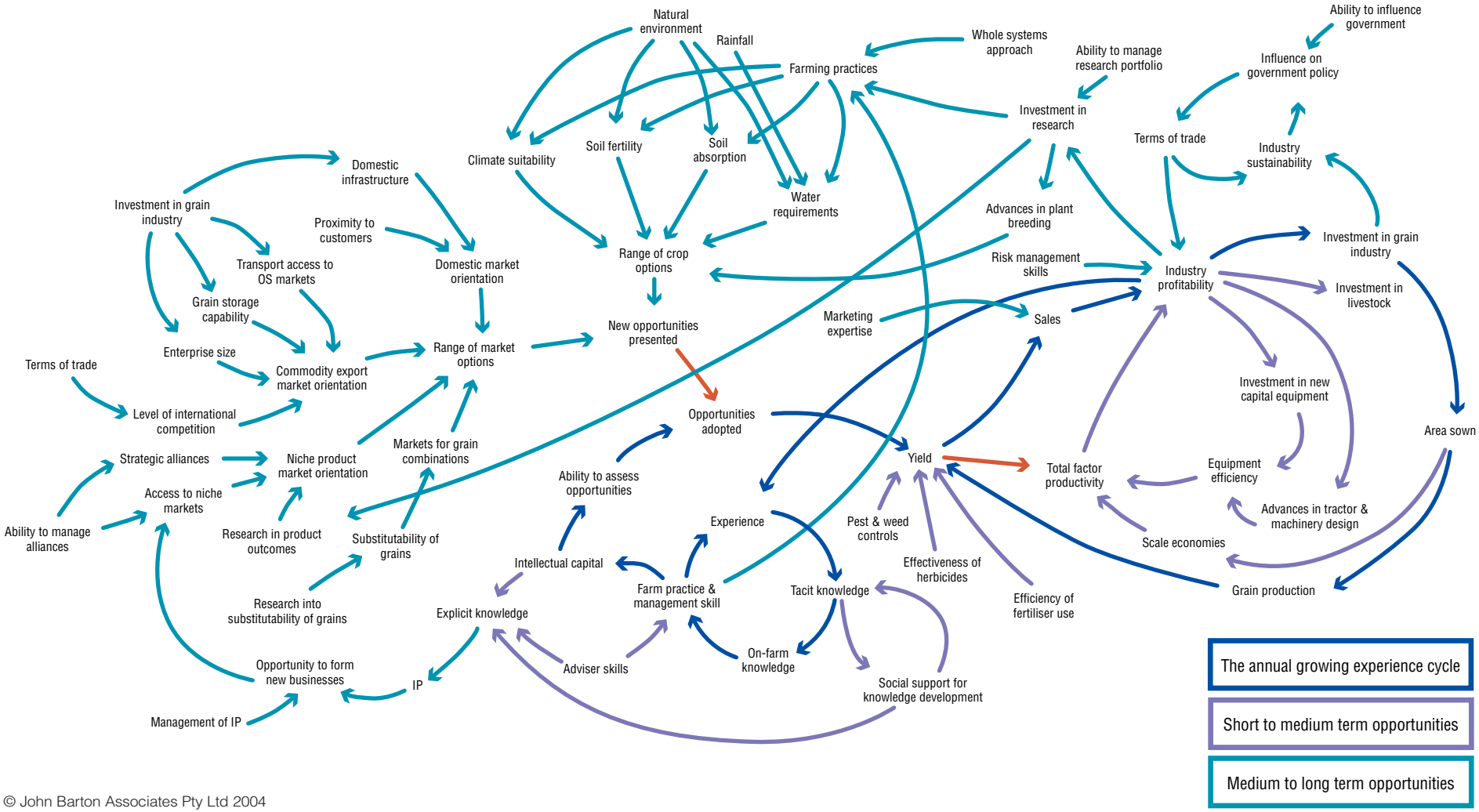
Supply Value Chain follows the physical movement of goods and related services from upstream of farm to the point of consumption. Supply Economic Value added at any point "n" is Cost of Capital and Labour at point "n". This sets the costs of inputs at each point and determines Economic Value from a supply perspective.
The cumulative cost at point "n" is the sum of labour and capital costs to that point.
Supplier Value at point n = Benefits / (Ln +Cn) x Risk x Price at n.
Cumulative input costs = Sum of (Cn + Ln)

Demand Value Chain moves from point of consumption back to upstream farm inputs where the consumer priorities set the limiting consumption price at that point and all other prices from a subset of that price at each point in the chain. Value to the buyer at point n = Buyer Benefits/Costs of access at point n x Risk.
Cumulative Demand Value = Sum of Pn – (Cn + Ln)

Community Value Chain follows the supply chain and relates community benefits to the costs of providing community services to support the industry. It includes public capital infrastructure such as roads, rail, water, power, education, community services, health services required to support the industry.

Appendix Two

Figure 10: ***Grains industry dynamics***



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