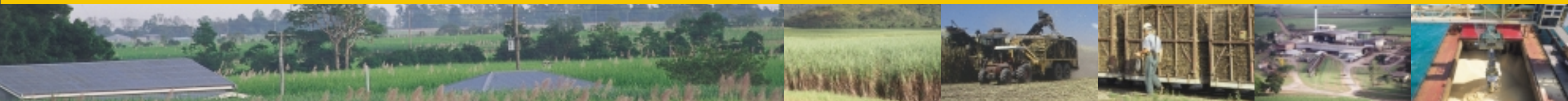




# SUGAR RESEARCH AND DEVELOPMENT CORPORATION

Research and Development Plan 2003-2008



Department of Agriculture, Fisheries and Forestry → Australia



SRDC - working to underpin a vibrant sugar industry

The 21st century presents an increasingly complex operating environment for the Australian sugar industry. It has to address the issues of profitability and competitiveness while, at the same time, using resources sustainably, being environmentally responsible, and meeting the needs and expectations of Australian society.

Responding to this complexity presents immense and challenging opportunities for R&D as it seeks to underpin the future success of the Australian sugar industry. Critical to that success will be a greater emphasis on “systems thinking” and the social process of “engagement” to implement change.

In shaping its R&D investment portfolio during the term of this Plan, SRDC will continue to take a strategic view of these needs and opportunities so that it meets the expectations of its stakeholders in industry, Government, and the community.

**SRDC's core business is**  
**.....to foster an innovative and sustainable Australian sugar industry through targeted investment in research and development**

An **Innovative** sugar industry will build capacity in people to  
.....Capitalise on and Embrace advances in Science, Engineering and Technology

A **Sustainable** sugar industry will optimally combine the 3 Ps  
.....Profit (economy), Planet (environment), and People (society)



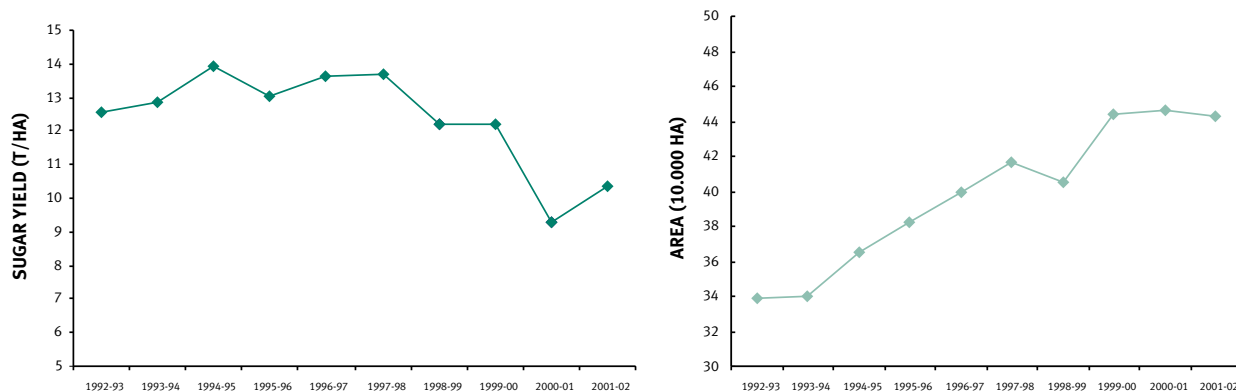


## Background

The sugar industry is mainly concentrated in the coastal portions of north-eastern Australia (ranging from the Atherton Tableland in the north to northern New South Wales) where it underpins local economic activity and employment. The industry provides basic regional infrastructure and generates significant wealth from a part of Australia where alternative agricultural production options are limited. It directly employs about 22,000 people at various centres along the coast and about five times that number in ‘upstream’ and ‘downstream’ economic sectors dependent on the industry. There are currently about 7,000 canegrowers in Queensland, New South Wales, and the Ord River Irrigation Area in Western Australia, with the overwhelming majority of holdings being family businesses. Cane is currently supplied to 28 sugar mills.

With up to 85% of raw sugar production being exported, maintaining and improving the competitiveness of the Australian sugar industry in the global marketplace is a constant and major challenge. The sugar industry’s mainly coastal location, adjacent to environmentally sensitive areas of international significance (the Great Barrier Reef, rainforests, and coastal wetlands), places particular responsibility on the industry to ensure that its practices are environmentally sustainable.

SUGAR YIELD PER HECTARE AND AREA OF CANE HARVESTED FROM 1992 TO 2001



## Current state of the industry

In recent years, the sugar industry has faced increasingly difficult times with reduced sugar yields and low industry profitability. This has been associated with a combination of adverse internal factors (e.g. supply problems caused by natural hazards, particularly high climatic variability and disease, and the rigidities of the current structure and culture of the industry) and external factors (e.g. the sharp downturn in world prices for sugar, changed relativities in world currency exchange rates, and disappointing returns on capital and low profitability throughout the industry value chain).

When the previous R&D Plan 1999-2004 was being developed, Australian sugar production was 4.9 million tonnes, down from the record 5.6 million tonnes in 1997-98. Production was expected to return to 5.2 million tonnes in 1999-00 and to be more than 6 million tonnes by 2003-04. Production did in fact increase to 5.4 million tonnes in 1999-00, but fell dramatically to 4.2 and 4.6 million tonnes respectively in the next two years. The decline was due to sharp reductions in sugar yield per hectare (see chart page 2) from the record of 13.9 t/ha in 1994-95. In 2001-02, the sugar yield of 10.3 t/ha was 16% below the mean yield for the past 10 years of 12.4 t/ha. The area of cane harvested increased rapidly during the 1990’s as shown in the chart (see page 2), but expansion ceased by 1999-00 at a level of about 445,000 ha.

The economic health of the industry has been further eroded by lower world sugar prices. World market prices averaged over 10 US c/lb from 1990-98, but only 7.3 US c/lb from 1999 to date. This reflects not only an oversupply of sugar on the world market, but also the increasing dominance of Brazil in supplying the world market. Returns to Australian sugar producers are expected to be less than AUD 270/t in 2002-03 compared to more than AUD 350/t in 1997-98.

The economic downturn of the industry has impacted strongly on the societal sustainability of the coastal communities that are dependent on it. Additionally, the industry has come under increasing scrutiny with respect to its potential environmental impacts on the Great Barrier Reef Lagoon.

**This Plan has been framed within the context of the realities of the current state of the industry while continuing to look to the health and sustainability of the industry in the longer term.**



### *Key drivers in the industry's external environment*

The Australian sugar industry is no stranger to **competition** and the forces of **globalisation**. It has traditionally sold a high proportion of its production into a world market heavily distorted by the protection given to local production in a number of potential major overseas markets. The industry has remained competitive over many decades through an emphasis on technological efficiency in combination with boldness, innovation, and long-term investment in infrastructure and R&D.

However, while Australia is technologically very efficient, competitors have achieved gains in cost efficiency and overall revenues by more effectively integrating operations across the sugar value chain, and creating more value-adding opportunities. Brazil is a case in point.

The rapid growth in its sugar exports, particularly during the last five years, has brought major new challenges to the Australian industry. Brazilian exports increased sharply from 1.0 million tonnes in 1995-96 to 10.6 million tonnes in 2001-02, with more than 12.5 million tonnes estimated in 2002-03. The industry has many natural and market advantages over Australia and other suppliers (e.g. large areas of suitable land, favourable climate, low labour costs, a large domestic market for both sugar and ethanol, and favourable exchange rates). In combination, these factors enable Brazil to place large tonnages of low-cost, high-quality sugar onto the world market. It seems likely that it will continue to have a dominant influence on world market prices for sugar for the foreseeable future. Brazil thus provides a new benchmark for all countries competing on the international sugar market.



In addition to **competition** and **globalisation**, other key forces or drivers impacting on the industry are:

- **Availability of new technologies.** These include Information Technology and the associated digitisation of industry operations, and Biotechnology - which may provide the next great leap forward in plant improvement and perhaps even a radical modification of the products available from the sugarcane plant.
- **Pressure for environmental sustainability.** This pressure is coming from a wide range of levels including world markets, Australian and other national governments, the sugar industry itself, other industries affected by the sugar industry, and from the general community. In some areas, the sugar industry's "right to farm" is even under challenge.
- **Societal aspirations and expectations.** With increasing urbanisation along Australia's eastern seaboard, the industry's neighbours are changing and these new neighbours are expecting greater societal responsibility from the industry (e.g. in relation to road safety and public amenity).

"Triple bottom line" thinking (incorporating economic, environmental, and social dimensions) is being increasingly adopted by other industries and public companies.





### Commonwealth Government priorities

The Commonwealth Government - the industry's major R&D funding partner - has nominated a comprehensive set of priorities for all the Rural R&D Corporations. They have much in common with the above Key Drivers recognised by the industry. The priorities, released in 1999 by the Minister for Agriculture, Fisheries and Forestry are:

- Sustainable management and use of our soil, water, air, vegetation, and fauna resources integrated into farming and land use systems
- A whole-of-industry approach to production, processing, and marketing to ensure the chain works to best advantage
- Development of biotechnology, along with sensitive handling to accommodate consumers' concerns
- Trade and market access negotiations
- Maintenance and enhancement of our clean green image
- Addressing food safety concerns of customers
- Cultivating creativity and innovation among human resources

These priorities were an important input into the process of determining the following industry priorities that underpin this R&D Plan.

### Industry priorities

After careful consideration of the current state and external environment of the sugar industry and of its key drivers, industry stakeholders have determined that the industry's principal priorities or needs are:

- Whole-of-industry profitability through exploitation of opportunities for better integration across the value chain to ensure enhanced revenue and increased cost efficiency
- An economically, environmentally, and socially sustainable industry that has sustainable farming, harvesting, processing, and distribution systems, and efficient and effective marketing systems for Australian sugar
- An efficient and effective Research, Development, and Extension capacity that collaborates strongly across R&D providers and with the various components of the industry value chain
- Attraction and retention of people who are talented, well trained and committed to the sugar industry

### SRDC priorities

Within the scope of these identified industry priorities or needs, SRDC has identified a specific set of strategic priorities to address during the term of this R&D Plan. These are:

- Improved sugar yield per cultivated hectare through improved varieties, cropping systems, and harvesting practices
- Cost-efficient value chain management and capital utilisation through integrated and optimised harvest and transport, milling, and marketing processes
- More accountable environmental practices across the industry through an enhanced focus on environmental issues
- Diversification through the development of alternative products from sugarcane and sugar
- Improved farm profitability through enhanced business and farm management practices
- Improved industry performance through increased uptake and implementation of R&D outputs and technologies
- Improved and more urgent attention to change management driven by an industry-wide acceptance of the need for transformational change
- Enhanced capacity for continuous improvement through the development of human capital throughout the industry
- Enhanced decision making and management of risk across the entire value chain through improved measurement and monitoring systems

SRDC will focus on these priorities during the life of the Plan in order to move towards the achievement of the **SRDC Corporate Outcome ...**

***A profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities.***



### A change in emphasis

Despite the significant improvements in technical and cost efficiency of the components of the industry value chain (growing, harvest and transport, milling, and marketing) made in the last decade, the industry faces continuing international competition, cost-price pressures, and a range of environmental and societal pressures.

The focus of the previous R&D Plan 1999-2004 was primarily disciplinary, and gave greater prominence to the individual components and disciplines than to the relationships between the components within the industry value chain. The Plan organised the R&D portfolio into seven Programs (plant improvement, crop management, crop protection, cane harvest and transport, sugar manufacture, environmental and natural resource management, and enhanced marketability) and used a variety of mechanisms to deal with the relationships between them – namely Program 8 (whole of industry competitiveness) and three Multi-Program Themes (delivery of industry and community benefits, ecologically sustainable development, and sugar quality). By 2001, however, it had become increasingly clear that this component approach alone would not sustain industry futures, and that a more systems-based approach was required if SRDC was to effectively address the emerging priority R&D issues.

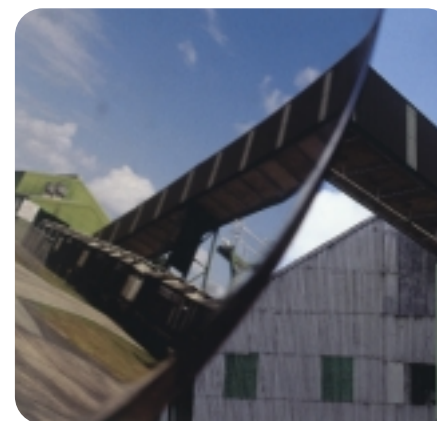
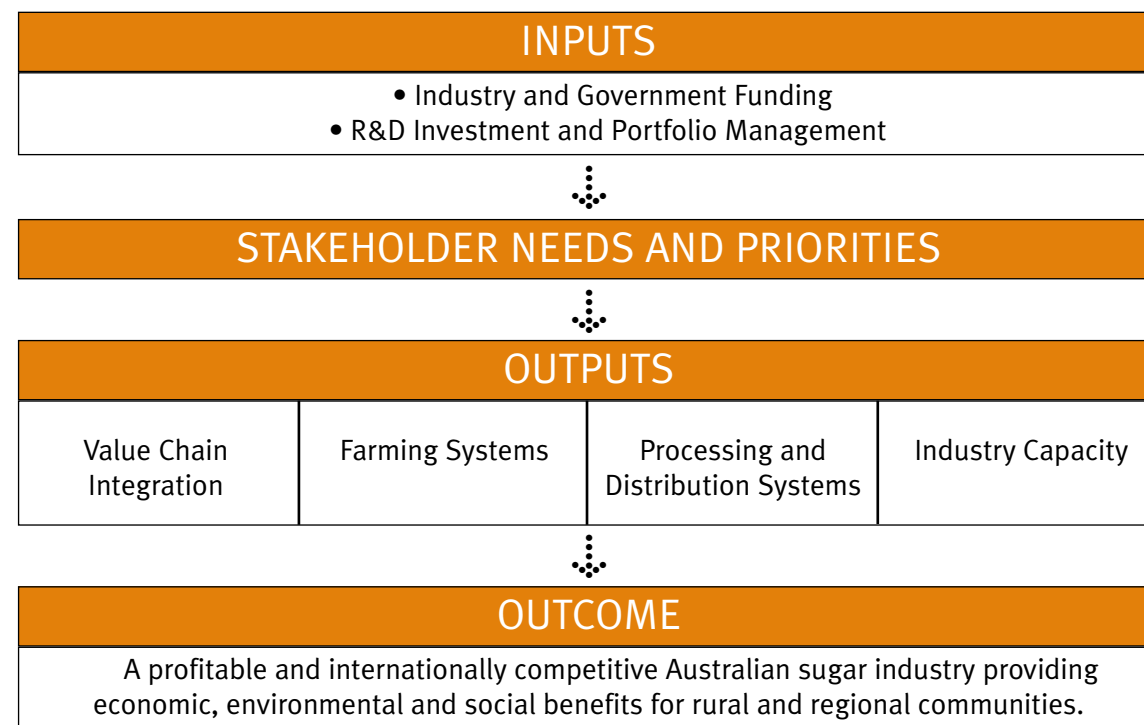
While investment in component R&D will continue to produce incremental and beneficial improvements, it is unlikely, in isolation, to produce sufficiently rapid progress to meet the significant challenges facing the sugar industry. The systems-based approach taken in this R&D Plan 2003-2008 will realise the many opportunities available from a consideration of the whole value chain. It will use novel multi-disciplinary tools and technologies, that integrate across the industry value chain, and will develop human capacity and associated processes in order to implement more rapid and more radical change across the system as a whole. The Plan has a four-Program structure that will also ensure better integration of research and lead to the delivery of enhanced economic, environmental and societal benefits to the sugar industry and to the broader community within which it is located.

The four-Program structure of the Plan is:

- Program A** Value Chain Integration
- Program B** Farming Systems
- Program C** Processing and Distribution Systems
- Program D** Industry Capacity

### Corporate Strategy

In the R&D Plan 2003-2008, the SRDC's corporate strategy is based on an integrated systems approach. In input-output-outcome terms, the approach can be visualised as follows:



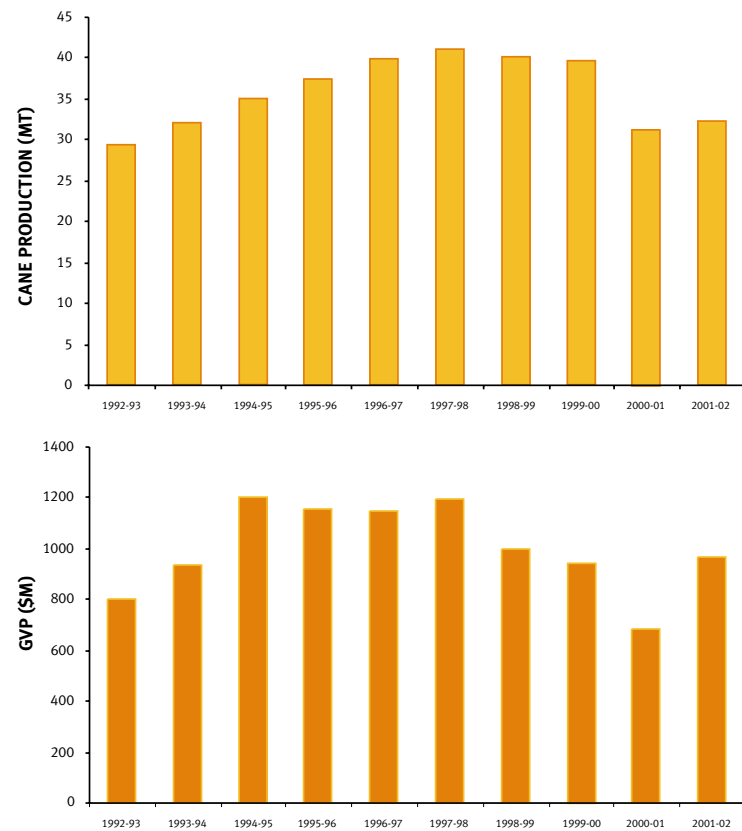


### Resources available

The primary source of income for R&D funding through SRDC is a levy on growers and millers of sugarcane. The current levy, which has applied from 1 April 2002, is \$0.14 per tonne of sugarcane harvested. Expenditure of these funds is matched by the Commonwealth Government on a dollar-for-dollar basis up to 0.5% of the Gross Value of Cane Harvested. Hence, the funds available to SRDC for investment in R&D vary with both the level of production of sugarcane and the price received by Australian producers.

The marked reduction in sugarcane production since 1999-00, and in gross value since about 1997-98, has significantly reduced the funds available to SRDC. Given that current world prices are not expected to recover before 2004, and that recovery in crop production is uncertain, SRDC expenditure for the two to three years from 2002-03 is expected to be in the \$9-10 million range - well down on the levels of \$12-15 million during the previous R&D Plan.

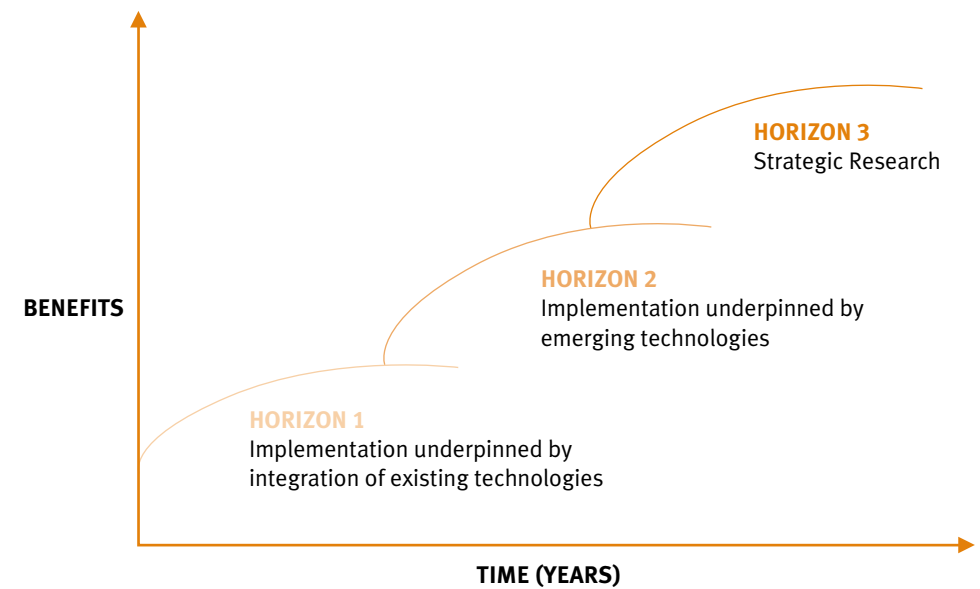
AUSTRALIAN SUGARCANE PRODUCTION AND GROSS VALUE OF CANE HARVESTED FROM 1992 TO 2001



### Resource allocation

In these difficult times, and with limited R&D resources, SRDC believes that greater shorter-term gains in industry performance are available through integrating existing knowledge towards whole-of-system solutions than are available through new R&D investment into component research. Thus, in order to address the research priorities previously outlined, the R&D Plan 2003-2008 gives particular attention to three broad areas - use of an integrated systems approach, improved uptake of existing R&D outputs by the industry, and capacity building to more fully realise the potential of people and partnerships throughout the industry. This requires a significant change in the allocation of funding between the Programs, with greater emphasis being placed on the Value Chain Integration and Industry Capacity Programs.

In allocating resources, SRDC must also achieve, amongst other things, a balance between shorter-term and longer-term investments. This is represented in terms of three investment horizons in the chart below. The horizons have both a different timeframe for delivery of benefits and a different magnitude of benefits, with research risk being commensurate with the level of benefits. In the shorter-term (Horizon 1), greater uptake and implementation of existing knowledge and technologies, underpinned by the integration of these best practice technologies across the value chain in mill areas, is required to provide optimal solutions for the sugar system as a whole. In the medium term (Horizon 2), implementation of emerging technologies is required for the delivery of benefits. In the longer term (Horizon 3), continuing investment in strategic research is required to generate the technologies and approaches that will ensure the future sustainability of the industry.





The resource allocation for the period 2001-02 and 2002-03 (as defined in the SRDC Annual Operational Plans) was as shown in the table below. It provides information on the relative allocation of current investment across the four Programs. The very strong emphasis on the Farming Systems Program is clear.

Value Chain Integration	Farming Systems	Processing and Distribution Systems	Industry Capacity
9%	60%	21%	10%

In order to respond to the stakeholder needs and priorities as well as provide the flexibility to address emerging needs during the life of the Plan, a significant shift in investment focus is required. In implementing the R&D Plan 2003-2008, therefore, R&D investment decisions will progressively move the emphasis of resource allocation across Programs during the life of this Plan to reflect the following profile:

Value Chain Integration	Farming Systems	Processing and Distribution Systems	Industry Capacity
20-25%	45-50%	15-20%	10-15%

This investment profile will be monitored and reviewed annually and adjusted, as appropriate, to capture emerging trends and opportunities.

### What the R&D Plan 2003-2008 will deliver

SRDC will work in partnership with industry, government, R&D providers, and associated rural communities over the next five years to underpin a vibrant sugar industry with the object of achieving its **Corporate Outcome...**

**A profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities.**

Specifically, SRDC will work with its stakeholders to deliver the following outcomes:

- *An increasing and more reliable cane supply*, primarily through the implementation of robust farming systems that enhance economic and environmental performance, and are less vulnerable to the impacts of adverse factors such as disease and climate variability
- *Facilitation of change* which promotes adoption of whole-of-system solutions to enhance revenue and cost efficiency across the value chain at mill area and regional levels
- *Demonstration of environmental sustainability* to the satisfaction of all stakeholders
- *Diversification of the income stream* from products derived from sugarcane
- *Enhancement of human capacity and partnerships* between industry, research and regional communities to underpin change, learning and innovation
- *An effective R&D capability* underpinning industry futures

**Critical to our success** will be greater emphasis on “systems thinking” and on the social process of “engagement” to achieve and implement change.

The destination remains the same, but the journey will be different from that followed in the past. It is a journey that builds capacity through learning how to conduct R&D involving new partnerships, alliances and collaborations. It focuses on participative implementation of whole-of-system solutions to benefit industry participants and the broader community.







*At the Project and Program level*

The major thrust of the R&D Plan 2003-2008 is to add value by promoting a participative systems approach to integration and uptake of research across the value chain. The Plan identifies the goal of each Program and the desired outputs and overall outcomes. The indicators or measures of performance at the goal level are documented as outcomes under each Program area.

The outputs and performance indicators agreed with individual R&D providers at Project level will provide the basis for finer scale Performance Management under the Plan. The measures of performance will be dependent on the nature of the Projects funded under the strategies in each Program. An essential criterion for Project approval and funding in line with this Plan will be the clear enunciation of:

- The Project objectives, outputs, performance indicators and measures, and milestones (including existing or proposed baseline measures where appropriate)
- The method of Project evaluation to be used as a basis for assessment of impact, as well as a learning experience to build capacity, and to guide future R&D investment
- The Project process and its links to the planned outputs (including, where appropriate, details of stakeholder participation, systems integration, implementation/adoption strategies and enhancement of human capacity)

Aggregated Project outputs will provide an assessment toward Program goals.



*At the Corporate level*

The following performance measures will guide assessment of SRDC's performance in implementing its overall R&D Plan.

*Economic returns from SRDC investments*

Measures

- Investment analyses of completed R&D Projects demonstrate a benefit:cost ratio greater than 5:1
- Adoption rates benchmarked for at least three technologies per year

*Environmental returns from a better understanding of environmental management issues, and a reduction of adverse impacts on the industry's production environment and on other ecosystems*

Measure

- Case studies demonstrating improved natural resource management and reduced environmental impacts in quantitative and/or qualitative terms

*Societal returns from investment in industry and public health and safety; human resource capacity and capability; and R&D with significant community benefits*

Measures

- Case studies demonstrating improved health and safety
- Completion of at least two tertiary scholarships and two study tours or conference attendances by industry R&D personnel per year
- The number of producers involved in participative action research increasing each year
- The proportion of total SRDC funding that contributes benefits beyond the sugar industry exceeds 30%
- The proportion of total SRDC funding that contributes significant benefits to rural and regional communities exceeds 20%



### At the industry level

In relation to the outcomes listed above, the following targets have been broadly indicated by industry stakeholders during the development of the Plan, and will be used to gauge progress over the life of the plan:

- National average sugar yield of 15 tonnes per harvested hectare consistently
- 20% increase in cane yield at regional level (over the ten year average prior to the Plan)
- Capability to process this level of cane supply for raw sugar production with the existing asset base
- A step-change in unit cost of production (down 20%)
- An externally audited Environmental Management System
- A 10% increase in industry income derived from products other than raw sugar



### Progressive achievement of outcomes

The following diagram shows the progressive and cumulative achievement of outcomes over the period of the Plan, leading to delivery of the overall Corporate Outcome.

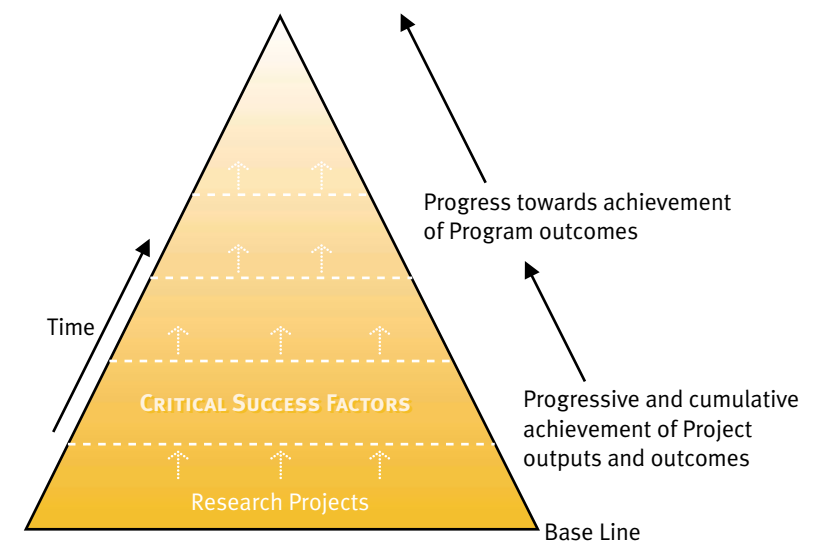
The delivery of outputs and outcomes from the range of projects undertaken each year will be assessed against performance indicators and the investment strategies that guided selection of these Projects (their aims, results, deliverables). Over time, the cumulative achievement of **outcomes at the Project level** will lead to the achievement of **Program outcomes**, and finally to the achievement of the Corporate Outcome.

This achievement will be underpinned by the Critical Success Factors identified during the development of the Plan. These include greater emphasis on:

- “systems thinking” and
- the social process of “engagement”

to achieve and implement change.

A profitable and internationally competitive Australian sugar industry providing economic, environmental and social benefits for rural and regional communities.





## VALUE CHAIN INTEGRATION

## PROGRAM A

### *Background*

The Value Chain Integration Program recognises that the sugar industry operates as a value chain at different levels of the mill area, region, and nation and that more integrated management of this value chain offers major opportunities for enhanced competitiveness.

The past R&D focus has been primarily directed towards the independent components of the value chain. This incremental component approach to R&D will continue to produce beneficial improvements, but these are unlikely, in isolation, to produce sufficiently rapid progress to meet the significant challenges facing the sugar industry. New opportunities will be realised by considering the whole value chain, and by using multidisciplinary approaches to integrate across the various parts of that chain (growing, harvest and transport, milling, and marketing). Systems solutions will be underpinned both by the use of novel technologies that increase productivity and efficiency, and add value to the sugar system, and by the development of processes and human capacity to implement change across the system as a whole.

This Program therefore is concerned with adding value by making the value chain work better. It will require stronger collaborative R&D to underpin changes in industry arrangements and structures. To qualify for funding under this Program, R&D proposals will require active concurrent engagement of more than one component of the value chain and, for that R&D to be successful, it will require concurrent changed practices in more than one component.

Significant opportunities exist in the Program to optimise the use of whole-of-system resources by exploiting linkages and inter-dependencies across the industry value chain. Optimum solutions need to underpin not only the economic viability of the industry but also its environmental and social sustainability. Strategies are required to enable the sugar system to better respond to the variable drivers of the system (such as climate and market signals), and to other drivers (such as industry structure, capital infrastructure, operational culture, and product quality). Implementation of such strategies will lead to quantum advances in efficiency and profitability of the whole value chain. Innovation, based on advances in information technology coupled to participative implementation of change, will be vital. Particular emphasis needs to be placed on a whole-of-system approach to harvest and transport leading to enhanced revenue and cost efficiency. This may require the establishment of clearer economic signals between growers, harvesters, millers and marketers that will assist the adoption of innovations derived from R&D.

### *Goal*

Adoption of whole-of-system solutions based on integrated management of the value chain, particularly at mill area and regional levels.

### *Strategies*

- Develop knowledge, technologies and implementation processes to optimise the use of whole-of-system resources by:
  - Understanding the whole value chain including linkages and inter-dependencies
  - Developing optimisation and economic modelling capability for whole-of-system analysis and quantifying the net benefits of alternative options
  - Developing and implementing mill area and/or regional action plans to underpin the industry's transition to the future
- Facilitate sustainable whole-of-system change using a cooperative approach across the industry value chain by:
  - Engaging the community in the change process
  - Implementing integrated systems, particularly in harvest and transport
  - Developing optimal structures and policies that increase whole-of-system profitability

### *Outputs and Measures of Success*

Our success will be measured by delivery of the following outputs:

- Capability for exploiting linkages and inter-dependencies across the industry value chain
- Risk assessment techniques that improve decision making for optimised economic, environmental and societal benefit
- Mill area and/or regional action plans as blueprints for progress
- Implementation of integrated systems at the mill area level, particularly those involving harvest and transport
- Benchmarks of industry performance
- Improved links and relationships between industry stakeholders and the community on a mill area, regional and national basis

### *Outcome*

Increased efficiency and overall profitability of the industry as an integral part of sustainable regional development.

## FARMING SYSTEMS

## PROGRAM B

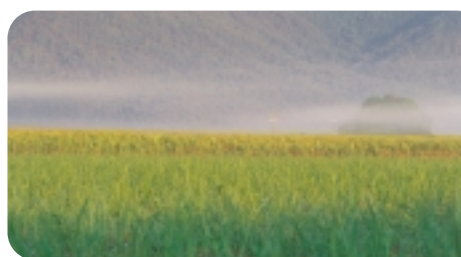
### Background

The Farming Systems Program recognises that sugarcane productivity is essential for the viability of growing, harvest, transport and milling enterprises, and that it needs to be achieved through profitable, safe and environmentally responsible farming practices in harmony with community expectations.

Significant opportunities exist in the Program to seek solutions based on best practice management of resources (e.g. varieties, soil, water, nutrients, pest management inputs, capital, and labour), given the variable influences of climate, pest and disease incursion and incidence, repair of soil degradation, cost/price structures and social structures. A systems approach to farming and the development of novel pathways for adoption of more sustainable practices based on participative action research will be vital. The Program will increase its focus on the implementation of integrated management solutions to address economic and environmental goals and reduce its focus on individual components.

Innovation, based on advances in information technology (particularly in cropping systems and economic modelling), coupled to the use of participative action learning for improved implementation of integrated pest management, planting and rotation management, water and nutrient management, and business management practices, will be critical. Innovation will also be required in integrated environmental management in order to further reduce movement of sediment, nutrients, sugar and other chemicals into waterways.

New opportunities in biotechnology and the new genomic science for sugarcane improvement warrant investment, commensurate with risk. Such investment should be targeted at closer integration of conventional and biotechnological approaches to the breeding of sugarcane varieties and to the examination of opportunities for radical modification of the sugarcane plant to produce novel bio-materials as a bio-factory.



### Goal

Adoption of sustainable sugarcane production systems based on integrated management of resources at farm level.

### Strategies

- Develop knowledge, technologies and implementation processes to underpin sustainable farming systems by:
  - Understanding the impact of resource inputs on system performance in variable production environments
  - Developing enhanced tools in systems analysis for improved on-farm management decision making
  - Developing tools and protocols for improved environmental management
- Improve the genetic performance of the sugarcane plant for increased sugar production in diverse environments and for the generation of new products
- Implement integrated solutions for sustainable sugarcane production by using a systems approach to best practice management

### Outputs and Measures of Success

Our success will be measured by delivery of the following outputs:

- Development and implementation of best practice in
  - Farm management
  - Resource utilisation
  - Environmental management
- Enhanced sugarcane varieties

### Outcome

Robust production systems that are both profitable and in harmony with the environment and societal expectations.



## PROCESSING AND DISTRIBUTION SYSTEMS

## PROGRAM C

### *Background*

The Processing and Distribution Systems Program recognises that technological advance is critical for more efficient systems, but implementation of advanced technologies is conditional on better utilisation of capital and the development of innovative products.

Significant opportunities exist in the Program to improve the design and implementation of harvest, transport, milling and marketing processes while ensuring that they are consistent with environmental and societal responsibility. These will lead to better utilisation of capital, greater cost efficiency, enhanced product recovery, expanded product range, and enhanced product quality.

The key issue is the ability to harvest, transport and mill the available cane supply in the most cost effective manner, using existing capital assets. Complexity has increased and some of the economic drivers have changed dramatically over recent years - with some mills opting for clean cane and high quality sugar and other mills opting for biomass harvesting and cogeneration. Different enterprises will have different needs for processing and distribution systems. More work is needed on economic modelling of different options to help the decision-making process. Innovation, based on advances in design of efficient systems and in best practice management, is vital.

New opportunities in diversification to broaden the income stream from simply processing sugarcane, warrant investment, commensurate with risk. Such investment should be targeted at developing an expanded product range and exploring opportunities for extraction of novel bio-materials from modified sugarcane varieties.

### *Goal*

Adoption of flexible cost-effective systems for sustainable harvest, transport, milling and marketing based on innovative design.

### *Strategies*

- Develop enhanced capability in analysing and optimising processing and distribution systems
- Develop and implement innovative technology and best management practices that enhance revenue, and improve capital utilisation and environmental performance in harvest, transport, milling and marketing systems
- Diversify the income stream from the products of sugarcane, primarily by broadening the product base

### *Outputs and Measures of Success*

Our success will be measured by delivery of the following outputs:

- Improved cost efficiency in processing and distribution systems
- Enhanced revenue derived from:
  - Reduced loss of sugar in harvest, transport, and milling systems
  - Enhanced product quality
  - A more diverse product range
- Responsible environmental management

### *Outcome*

More productive and cost-effective processing and distribution systems in harmony with the environment and societal expectations.





## INDUSTRY CAPACITY

## PROGRAM D

### Background

The Industry Capacity Program is concerned with adding value through more fully realising the potential of people throughout the industry. It recognises that improved practices and technologies must actually be adopted in order to improve industry performance and to address the increasing complexity associated with environmental and societal expectations. This requires an increased capacity to respond to change.

To realise the opportunities arising from innovative R&D, there is an important need to enhance human skills to address the challenges of the increasingly complex operating environment of the Australian sugar industry. Investing in people, and fostering alliances, partnerships and collaborations will be critical to success in developing integrated system solutions that contribute to a vibrant Australian sugar industry.

The sugar industry in general has not easily embraced change, nor has it routinely evaluated progress, options, and performance relative to benchmarks within and outside the industry. The challenge for SRDC is to encourage a culture of evaluation and continuous, and at times, radical improvement across the industry value chain. Meeting these needs will require the development of skills, competence and capacity-to-change in all components of the industry value chain. It will also require the research base of the industry to be broadened where appropriate.

The industry also has a culture of negotiated, rather than facilitated, outcomes. The latter approach is recognised as being more powerful in obtaining win-win outcomes that optimise benefits. Building human capacity in facilitation of whole-of-system solutions is essential and requires the development of leadership and business management skills in industry enterprises, and skills to facilitate and adapt to change in the industry and associated communities.



### Goal

Building human capacity for change, learning and innovation in the sugar industry.

### Strategies

- Enhance people's capacity to learn and change, including through
  - An action learning approach to the acquisition of management skills
  - Close involvement in participative R&D
  - Collaborative industry and community partnerships
- Foster targeted continuing education, attraction and retention of human capital throughout the industry value chain
- Promote safe healthy workplaces through the adoption of appropriate OH&S work practices
- Promote more effective coordination of R&D activities across industry and R&D providers, and enhance the performance of the R&D system through evaluation, review, and feedback
- Develop systems analysis skills of people within the industry

### Outputs and Measures of Success

Our success will be measured by delivery of the following outputs:

- Enhanced industry management skills at the mill area level
- Increased capacity of industry to participate in, and facilitate, change
- An increasingly coordinated approach by R&D providers
- R&D characterised by increased implementation of outcomes in partnership with industry and government
- Enhanced skills in R&D personnel

### Outcome

A skilled human resource base and enhanced industry R&D capacity focussed on delivery of economic, environmental, and societal benefits.



### Role

SRDC is a funding body focusing on producing outcomes to benefit the Australian sugar industry and the community. It does not conduct research itself but invests in, and manages, a broad spectrum of research by various research providers, with the goal of maximising stakeholder returns on R&D investment.

SRDC was established under the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act) on 1 October 1990. It is part of a broader initiative by the Commonwealth Government to involve industry more closely in the determination of the objectives of R&D and to make R&D more efficient and effective in addressing industry, government, and community needs.

It is the intention of the Commonwealth Government that R&D Corporations should provide leadership and be catalysts for change. They should identify needs and opportunities for R&D, including improvements in the adoption of research results, and exploit opportunities to expand the funding and impact of research.

### Objectives of SRDC

In line with the broad objects of the PIERD Act (see later), the objectives of SRDC are to:

- improve the competitive position and cost efficiency of the Australian sugar industry
- achieve sustainable use and sustainable management of the natural resource base of the sugar industry
- apply industry, scientific, and community resources more effectively to R&D in the sugar industry
- manage SRDC resources efficiently and to improve the accountability for expenditure on R&D for the sugar industry

### Accountability

SRDC is accountable to both the Commonwealth Government and to three Representative Organisations (the Australian Cane Growers' Council Limited, the Australian Cane Farmers' Association Limited, the Australian Sugar Milling Council Pty Limited) prescribed under the PIERD Act.



### Legislation

The Sugar Research and Development Corporation is a statutory authority of the Commonwealth Government established under the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act). Under this legislation, the Corporation is responsible to the Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry. SRDC is also subject to the *Commonwealth Authorities and Companies Act 1997*, (the CAC Act), which requires reporting of performance against the strategies, outputs and outcomes outlined in the R&D Plan.

The objects of the PIERD Act for the Rural R&D Corporations are to make provision for the funding and administration of research and development relating to primary industries with a view to:

- increasing the economic, environmental or social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries
- achieving the sustainable use and sustainable management of natural resources
- making more effective use of the resources and skills available in the community in general, and in the scientific community in particular
- improving accountability for expenditure upon research and development activities in relation to primary industries

In the course of addressing the above objectives, SRDC's principal functions are to:

- investigate and evaluate the requirements of the sugar industry for R&D and, on the basis of that investigation and evaluation, to prepare an R&D Plan; and to review and revise that Plan as necessary
- prepare an Annual Operational Plan for each financial year
- coordinate and/or fund the carrying out of R&D activities that are consistent with the Annual Operational Plan in force at the time
- monitor, evaluate and report to the Parliament, the Minister, and the Representative Organisations on R&D activities that are coordinated or funded, wholly or partly, by the Corporation
- facilitate the dissemination, adoption, and commercialisation of the results of R&D for the sugar industry
- perform such other functions as are conferred on the Corporation by the PIERD Act or by any other Act



## *SRDC Board*

SRDC is managed by a Board consisting of nine Directors, eight of whom are appointed by the Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry. The ninth Board member - the Executive Director - is appointed by the Board.

## *Corporate Governance*

The SRDC Board sets the Corporation's strategic direction and delegates responsibility for day-to-day management to the Executive Director. The Board is committed to governance systems that enhance performance and ensure that SRDC is operating according to accountability provisions of the PIERD Act and the CAC Act. Its functions include:

- establishing goals and setting strategic direction
- developing and approving a five year R&D Plan, an Annual Operational Plan and producing an Annual Report
- establishing policies and approving procedures for the operation of SRDC
- ensuring that risk assessment and management frameworks are in place to minimise business and financial risk
- ensuring that R&D resources are allocated to address priority issues effectively
- ensuring that Directors and staff maintain the highest ethical standards
- monitoring its own performance and that of its committees and SRDC management against agreed indicators

The Board has an Audit Committee to provide advice on accounting, financial reporting, compliance practices and risk management. The SRDC Business Process Management System, which folds active quality assurance into daily management of SRDC, is an essential tool in risk management. Its annual audit is overseen by the Audit Committee.

A Scholarships Committee provides advice to the Board on policies relating to scholarships and the awarding of scholarships.

The SRDC Board reviews its R&D activities and management systems at its July meeting each year including a review of progress towards achieving its corporate outputs and outcome. It also considers whether the R&D Plan requires amendment, as required by the PIERD Act.

