



NSW DEPARTMENT OF
PRIMARY INDUSTRIES



Primary Industries
**Science and Research
Strategy**
2005–08

Foreword

The NSW Department of Primary Industries is the largest provider of research within the NSW Government. NSW DPI's pre-eminence is due significantly to partnership investment from research and development corporations and Cooperative Research Centres, from individual farmers, fishers and foresters and their industry organisations, from universities and other government agencies, and from community organisations such as catchment management authorities.

NSW DPI's science and research pre-eminence also relies on the high quality of its research, reflected by the Institute for Scientific Information 2004 ranking of NSW DPI in the top 1 per cent of world research institutes for agricultural science and plant and animal science.

Primary industries R&D is an important source of economic growth for NSW, with productivity growth over the last 50 years for agriculture alone worth around \$500 billion. Government investment in primary industries research in NSW provides a bundle of public and industry benefits which are economic, environmental and social. For example, Government investment is needed to maintain critical research capacity to meet community expectations for effective response to virulent animal and plant pests and diseases, particularly if they are a threat to human health or the environment.

NSW DPI's research is meeting the expectations of the Premier of NSW to leverage its strength and foster excellence in science research through state, national and international collaborations between government, industry, the higher education sector and research institutes.

The purpose of this strategy is to outline NSW DPI's research priorities for the next three years, together with strategies and performance indicators to address those priorities. The Strategy has been developed following extensive consultation, with stakeholders canvassed most recently through responses to the 2004–05 Primary Industries Science and Research Strategic Directions statement.

The PI Science and Research Strategy contributes to government priorities outlined in NSW DPI's Corporate Plan 2005–2008. It aligns research strategies and performance indicators with key result areas and strategies in the Corporate Plan. Priorities include production systems and innovations that have the twin goals of profitability and sustainability, sensitive management and use of primary industry natural resources, effective management of plant and animal diseases and pests, and strategic and flexible allocation and maintenance of science and research resources.

We look forward to working with our investment partners to deliver science-based solutions and innovation to enhance the growth, sustainability and security of NSW primary industries.



Hon Ian Macdonald MLC

Minister for Primary Industries
Minister for Mineral Resources
Minister for Natural Resources



Barry Buffier

Director-General
NSW Department of Primary Industries



Background

NSW primary industries contribute 20% of NSW's gross state product. This increases to between 40% and 50% of economic activity in regional NSW. A significant proportion of this economic activity and productivity growth in the primary industry sector can be attributed to R&D conducted by NSW DPI. Benefit: cost analyses of the department's R&D consistently show returns in the order of between 5:1 and 20:1.

Primary industries research provides a bundle of public and industry benefits that are economic, environmental and social in nature. Economic benefits are shared by producers, processors and consumers, as are levies to fund R&D. Environmental and social benefits are predominantly public good outcomes. NSW DPI leverages public good outcomes by providing in-kind support to externally funded projects which are consistent with the public good outcomes it is seeking.

The Primary Industries Science and Research Strategy 2005-2008 has been developed from the Primary Industries Science and Research Strategic Directions Statement. That Statement provided an analysis of key primary industry issues at state and national levels and a review of NSW DPI's research capacity, strengths and competitive advantage, and proposed priorities for research with actions to deliver those priorities including a reinvestment plan. Responses from stakeholders to the Statement over the last nine months has led to the priorities identified in this three-year Strategy. Stakeholder input has come from research and development corporations, the Ministerial Advisory Council on Primary Industries Sciences, state and national government agencies, universities, industry bodies, catchment management authorities, and research, extension and regulatory staff and managers from the department's Agriculture and Fisheries, Primary Industries Trading, Biosecurity, Compliance and Mine Safety, and Strategy, Policy and Communications Divisions.

The Primary Industries Science and Research Strategy 2005-08 contributes to government priorities outlined in NSW DPI's Corporate Plan 2005-2008. It aligns research strategies and performance indicators with key result areas and strategies in the Corporate Plan. The Strategy is underpinned by Divisional Branch plans that provide more detailed strategies, actions, performance measures and milestones and link planning and resource allocation.

Integral to implementation of the Strategy is the continuing development of cooperative alliances with universities, CRCs and other state and national agencies and Catchment Management Authorities. These arrangements enhance the pace of innovation and achieve economies in the use of human and capital resources for research.

The role of science and research

As part of NSW Department of Primary Industries, Primary Industries Science and Research:

- provides strategic science to enhance the growth, sustainability and biosecurity of NSW primary industries
- undertakes research and development
- advises on research and science policy and issues
- coordinates research investments, and fosters alliances and cooperative ventures
- develops innovative science-based solutions and technologies
- underpins creative solutions to enhance public policy.

A Framework for Investment

PIS&R faces ongoing pressure to deliver targeted, integrated and responsive services and better value for money. There will be a greater focus on outcomes and accountability. Decisions on allocation of resources between competing options will be increasingly open, consultative and inclusive.

PIS&R's research model is an integrated model responsive both to industry needs ('market pull') and to innovation by scientists ('technology push'). The model is sufficiently flexible to accommodate needs for cross-discipline research but also maintain long-standing activity in key areas of public benefit, such as natural resource management or freedom from pests and diseases.

To ensure the maximum benefit to the stakeholders, future resource allocation decisions for research will be based on the following framework:

- appropriateness of the issues
 - existence of market failure*
 - alignment with corporate goals and state needs and priorities
 - significance of problem
 - appropriateness and capacity of agency (skills, competence, critical mass, infrastructure or competitive advantage)
 - industry priority and support.
- efficiency of investment strategies
 - likely return on investment (economic, environmental, social)
 - achievement of a targeted outcome at least cost.
- effectiveness of research and development approaches
 - likelihood of success
 - identification of beneficiaries
 - capacity to extend new knowledge
 - probability of various (desirable and undesirable) outcomes
 - performance against agreed indicators.

* Market failure: where primary industries have insufficient incentive or significant obstacles to fund research, or producers are unable to adequately appropriate the benefits of research they may fund.

NSW DPI's Research priorities

These priorities have been formulated in response to global, national, state and sectorial strategic issues. They reflect the results of internal and external research reviews and the department's areas of strength and competitive advantage, and are consistent with the national research priorities, industry priorities, priorities for rural research and development corporations and companies, and NSW DPI's corporate priorities. They recognise that there exists a large private sector investment in mineral and forestry research.

These priorities have been refined through consultation with stakeholders including industry, government, and the Ministerial Advisory Council on Primary Industry Sciences. They are listed under four NSW DPI key result areas.



Strong economic performance of primary industries

Research will focus on enhancing primary industry profitability across NSW, either directly through innovation or indirectly by addressing constraints to present and future productive capacity.

NSW DPI will maintain a strong commitment to the state's major primary industries as well as support the emergence of new primary industries. It will also consider the industry-wide context, encompassing the food, fibre and seafood supply chains from the consumer back to the producer. Innovative technologies will be pursued that provide joint advantage to producers in, for example, agroforestry, inland aquaculture and mine landscape rehabilitation.

Specific research will be determined by government priorities, consumer needs, market specifications and stakeholder interest and support. Greater emphasis will be placed on facilitating market access and improved management of risk (both natural climatic variability and market volatility). For minerals, identifying and understanding mineralised sequences remains a priority.

The department will maintain a strategic investment in developing 'frontier' technologies, particularly in agricultural biotechnology, genomics, functional foods**, aquaculture, monitoring wild fisheries and aquatic ecosystems, along with applying new technologies to supply and interpret geoscience information.

** Functional foods are those whose components are associated with good health and decreased disease risk. They include dietary supplements or 'nutraceuticals'.

Priority outcomes

- New technologies that deliver substantial increases in the prosperity of rural and regional communities and the wealth of the state, while minimising environmental impacts.
- Production systems that achieve the twin goals of profitability and sustainability.
- Biotechnology capacity delivering innovative and efficient solutions.
- Globally competitive geoscience information available for industry development.
- Enhanced plant and animal genetics underpinning profitable and resilient industries.

PIS&R Strategies

Corporate strategy: Develop new technologies and production systems to drive innovation and maximise primary industry profitability.

- Develop improved farming systems that maximise the profitability and sustainability of cropping, grazing and mixed farming systems suited to different areas of NSW.
- Develop and optimise competitive technologies for horticulture, wild harvest fisheries, aquaculture, livestock and viticulture production systems.
- Develop horticultural post-harvest and market access technologies that support current markets and new market development.
- Develop new crop and pasture cultivars with improved quality attributes that contribute to greater market differentiation.
- Accelerate genetic gain in both plants and animals through stronger bioinformatics, quantitative genetics, high speed molecular screening methodologies, and genomic and molecular marker applications.
- Develop new functional food products with enhanced health attributes.

Corporate strategy: Develop knowledge about and provide information on natural resources to assist investment decision-making

- Monitor wild fisheries and aquatic ecosystems to assess management strategies to improve recreational fisheries.

Corporate strategy: Establish strategic alliances between NSW DPI and external science and research organisations to deliver productive, sustainable and cost-effective technologies

- Establish and maintain collaborative linkages and strategic alliances with external R&D providers, industry and other stakeholders.

Performance indicators

- New farming, forestry and fisheries practices that meet the goal of improved economic performance and sustainability developed and used across NSW.
- Knowledge of agriculture, forestry and fisheries enterprise integration options developed.
- Twenty agriculture, forestry and fisheries technologies, developed by PIS&R, adopted by industry by 2008.
- Economic impact of fifteen major new technologies, developed by NSW DPI, critically analysed by 2008.
- Eight crop and pasture cultivars with enhanced quality characteristics released by 2008.
- Seven genetic marker and screening methodologies developed and adopted by 2008.
- Innovative biometrical software packages ASReml version 2 and Katmandoo released in 2007.
- Statewide monitoring program for estuarine wild harvest fisheries in operation by 2008.



Wise management of natural resources

Wise management of natural resources

In NSW, farmers manage 76% of the land and a similar proportion of the state's developed water resources. Adoption of better farming practices is the most efficient and cost-effective way of improving natural resource management.

NSW DPI will pursue new farming systems that are profitable and compatible with natural processes. The department will work with landholders to develop systems of on-farm land use and management that deliver off-farm environmental benefits for the broader community.

Water is perhaps the state's most critical and vulnerable resource. NSW DPI's research will find innovative ways to improve water use efficiency and productivity (including the reuse of urban and industrial waste waters) and protect surface water and groundwater systems.

Climate change and variability is increasingly impacting on primary producers and rural communities. The department will work collaboratively to increase the understanding of the impact of climate change and variability and the adoption of technologies to manage climate risk.

Productive and healthy soils are integral to profitable and sustainable primary industries in NSW. Research addressing soil loss, salinity and acidity will continue to be a feature of the department's effort.

The department will pursue opportunities to better link investment with major natural resource management programs being delivered through regional authorities.

For the state's fisheries resources which are owned by the public, the department will work to monitor wild stocks and important fish habitats to ensure that the information necessary to manage the state's commercial and recreational fisheries is available in a timely manner and provided at world's best practice standards. Most research effort will be assigned to the priority issues facing our wild harvest fisheries, aquaculture industries and the conservation of aquatic biodiversity and habitats. For wild harvest fisheries and aquatic conservation issues, this involves monitoring wild stocks, aquatic biodiversity and habitats; identifying when changes to management are warranted; measuring the success (or otherwise) of such management changes; and developing innovative technology to preserve and restore threatened species. For aquaculture, developing viable and sustainable industries for NSW is the priority.

There is a significant component of the state's natural resources in publicly owned lands managed as part of the forestry estate. It is important for stakeholders to see evidence of good custodianship, including environmentally sustainable resource use, on these publicly owned lands. The department will work to develop and deliver systems and procedures for improving, testing, measuring and reporting on the ecological sustainability of resource use on public land and on the contribution forestry can make to environmental outcomes of private land.

NSW DPI will continue to work with other agencies to ensure that conservation priorities and natural resource management are fully informed by a knowledge of mineral resources and mineral resource potential.

Priority outcomes

- Environmentally and ethically sustainable water, soil, and land use systems developed and used by primary industries.
- Greater understanding of climate variability and its impacts.
- Primary industries with access to enhanced technology for:
 - sustainable mineral and energy production
 - waste reduction and the effective use of by-products
 - sustainable aquaculture and wild harvest operations
 - reduction of greenhouse gas emissions
 - profitable solutions to salinity and soil fertility problems.
- Increased knowledge of the interaction between agriculture, fishery, forestry and minerals activities and the natural environment, enabling productivity improvement and the minimising of environmental impact.
- Environmental services provided by primary industries identified and costed.

PIS&R strategies

Corporate strategy: Research, develop and monitor the implementation of best practice approaches to simultaneously deliver productivity improvement while minimising the environmental impacts of resource use

- Develop best-practice systems that recognise environmental credits and environmental enhancement as a production output.
- Model public and private benefits of best practice systems.
- Develop fishing technologies that reduce discarding and wastage whilst maximising sustainable catches of target species.
- Establish monitoring surveys of the species affected by commercial and recreational fishing and other anthropogenic impacts.
- Develop new techniques for the non-destructive monitoring of fish stocks.
- Monitor the state's aquatic ecosystems to assess natural variability and the effects of anthropogenic impacts.
- Contribute to the development of policies that encourage sustainable resource use and achieve an appropriate balance between private and public benefits and costs.
- Research, develop and deliver best management practices for the viticulture industry that minimise environmental impact.
- Develop new crop and pasture cultivars that enhance the water and nutrient use efficiency of current farming systems.
- Develop and evaluate innovative irrigation management systems that improve water use efficiency and reduce the environmental impacts of irrigated agriculture.
- Develop and evaluate improved dryland farming systems to better utilise water in the landscape in order to reduce the onset and impacts of dryland salinity.
- Develop and evaluate technologies and systems to overcome a soil's physical, chemical and biological constraints to agriculture and forestry production and reduce the off-site impacts of poor soil management.
- Develop and evaluate systems to remediate environmental contamination affecting primary industries.
- Develop and evaluate beneficial recycling uses in primary industries for key urban and rural organic waste streams.

Corporate strategy: Develop and deliver forest-related products and services that are ecologically sustainable and commercially viable.

- Quantify environmental services provided by planted forests in terms of greenhouse effects (e.g. carbon sequestration, bioenergy), biodiversity, salinity, recycling of urban wastes and rehabilitation of degraded lands.
- Improve understanding of the effect of forest practices (e.g. logging, fuel reduction burning, plantation establishment) on forest ecology.

Corporate strategy: Develop scientific approaches to manage climate variability.

- Develop a sound, science-based assessment of the risk posed to NSW primary industries by climate change.
- Convert climate science into practical and predictive risk management tools for use by primary industry stakeholders.

Performance indicators

- Ecosystem-based models developed and using an adaptive framework to inform the management of NSW's coastal ecosystems and their multiple uses.
- Survey designs of estuarine-based commercial and recreational wild fisheries developed by the end of 2007 and implemented throughout NSW by 2008.
- Non-destructive techniques for surveying fish populations and their habitats developed.
- Innovative designs of fishing gears developed and provided to managers.
- Innovative ways to improve fish passage and fish habitats and to protect threatened aquatic species developed and provided to managers.
- New monitoring tools and decision support systems developed for viticultural production systems in NSW wine producing regions.
- Industry/commodity climate change risk assessments completed for irrigated cropping, dryland grazing, mixed grazing and cropping systems.
- New irrigation farming technology developed for the rice industry that is more water efficient and cost-effective.
- Carbon sequestration in planted forests quantified through new low-cost accounting tools and predictive models that take account of CO₂ from wood products in landfill.
- Tree water use and salinity mitigation effects of planted forests in the 500-700 mm rainfall zone quantified.
- Biodiversity benefits of planted forests quantified for case study areas in southern and northern catchments.
- Eight hydrological research sites across NSW catchments used to quantify the hydrological impact of existing and new farming and forestry systems and used in the development and application of salinity impact models.
- New methodologies and guidelines developed and evaluated to manage soil health constraints for six agricultural and forest production systems.
- Risk assessments technologies for environmental contamination developed and implemented
- Guidelines developed for sustainable recycling of four waste products in agriculture and forestry.



Healthy and safe industries

Healthy and safe industries

Anticipated trade liberalisation will increase the movement of commodities and processed products across state and national borders, significantly increasing the risk of incursion of exotic pests and diseases. The department will research endemic, exotic and emerging pests and diseases that represent hazards to the production, welfare and market access of the state's plant and animal products. This research will provide the science that underpins effective biosecurity policy and its implementation.

The department will explore alternatives to chemical treatment for diseases, parasites and pests, thereby reducing pesticide resistance and risks to the environment and market access. Areas of study will include mechanisms of disease resistance and immunity; causative agents of disease; and interrelationships between environment, genetics and diseases in plant and animal populations.

The department will pursue improved capabilities for the detection and diagnosis of invasive pests and diseases, and develop containment and management technologies. The department will also determine how rural industries in NSW can better respond to animal disease emergencies.

The department will develop technologies and practices that deliver benefits for the broader community.

In the area of public health, pre- and post-harvest foodborne pathogens, such as *Campylobacter jejuni*, *Salmonella enteritidis* and *Escherichia coli*, pose continuing threats to human health, as do pesticide and other chemical residues. New scientific tools and rapid detection methods for both microbial and chemical contaminants are needed. The department's research will address hazards in the food production chain associated with pathogens, agrichemical residues and contaminants.

Priority outcomes

- Knowledge and products available to manage the risks of invasive pests and diseases of agriculture, forestry and fisheries.
- Reduced reliance on chemical treatment for diseases, parasites and pests.
- Enhanced capacity to respond to animal and plant disease emergencies.
- Maintenance of market access for food, fibre, timber products and minerals.
- Safe, quality-assured food and fibre and non-food products.
- Consumer confidence in the integrity of the state's primary products.
- Greater knowledge of best practice management of NSW common property aquatic resources.

PIS&R Strategies

Corporate strategy: Develop scientific solutions to pests, diseases, weeds and chemical contamination

- Develop cost-effective, science-based solutions to enable integrated pest and disease management for all agricultural industries.
- Develop technologies to reduce pesticide use and impacts on non-target organisms and the development of resistance and residues.
- Develop techniques to control or eradicate aquatic pests, particularly carp and Caulerpa.
- Maintain a breeding program for Sydney rock oysters that enhances resistance to QX disease and winter mortality.
- Develop crop and pasture cultivars with increased disease and pest tolerance or resistance.
- Develop management options to minimise the impact of damaging pathogens and insects of plantation trees and vertebrate pests in native and planted forests.
- Develop more effective vaccines for preventable animal diseases to improve their control and manage antibiotic resistance in animals.
- Develop tests which assist food quality assurance and identity preservation.
- Develop and prove the value of probiotics and other nutraceuticals for animal and human health.
- Develop means of reducing the incidence of antibiotic-resistant bacteria in animals.
- Develop integrated weed and pest animal management strategies to reduce the economic, social and environmental impacts of these pests.

Corporate strategy: Manage risks from and respond to diseases, pests, weed incursions and contaminants

- Survey aquatic ecosystems to identify pest incursions.
- Undertake an annual survey of the planted forest estate to identify the incidence, severity and extent of pests, pathogens, nutrients and weeds that limit tree growth and survival.
- Undertake targeted surveillance of key endemic and emerging animal and plant pests and diseases, as well as weeds and vertebrate pests, to develop effective risk management strategies.

Corporate strategy: Develop and maintain NSW biosecurity knowledge and capability to maintain food safety and market access.

- Develop more effective diagnostic technologies for plant and animal diseases and pests.
- Maintain, enlarge and digitise data about reference collections of pests and pathogens and link them to national biosecurity databases and surveillance networks.

Key performance indicators: Healthy and safe industries

- New diagnostic tools developed for at least 20 animal and plant pests and diseases by 2008.
- Participation in national 'ready response' disease and pest outbreak exercises.
- Three new or improved animal vaccines developed by 2008.
- The molecular basis of antibiotic resistance in bacteria carried by livestock understood and managed, with strategies under test by 2008.
- Two new probiotic formulations to reduce or replace antibiotic use registered by 2008.
- Suspect quarantine incursions confirmed and identified as and when required.
- Monitoring service provided for high-risk pests and diseases in New South Wales.
- Statewide genetic bar coding protocols for pests and diseases established.
- Regional biodiversity survey of marine, estuarine and freshwater ecosystems to identify pest incursions completed by 2008.
- Techniques to control or eradicate aquatic pests, particularly carp and Caulerpa, developed and implemented.
- QX disease resistance in successive generations of Sydney rock oysters increased to 95% by 2008.
- Six crop and pasture cultivars released with improved pest tolerance or resistance.
- Annual survey of pine and Eucalypt plantations undertaken to help forest managers control pests, diseases, nutrients and weeds in plantations.
- Diagnostic and management advice provided for incursions of exotic pests and diseases in forests and wood products.



Excellence in service delivery

Excellence in service delivery

PIS&R will strive to maintain and enhance its research capacity and culture of innovation to deliver quantifiable improvements in production and resource management and science-based solutions to assist industry and enhance public policy.

Drivers of investment include the strategies and priorities of the state's primary industries, government priorities, national priorities, the needs of the department's agriculture and fisheries, forests, biosecurity and mineral resources divisions, and the strategic priorities of the research corporations and community organisations such as catchment management authorities.

Services will, for the most part, be delivered through cross-disciplinary teams. Working with industry, project teams of scientists and technical, advisory and regulatory staff will be involved in planning and carrying out research, and in the application and use of the results of that research.

The department will ensure that the return to the state on investment in research is maximised. Continual enhancements to internal systems and processes will be implemented to maximise the efficiency and effectiveness of research efforts. Processes for research delivery and policy development will be transparent.

The Framework for Investment will be used to achieve a desirable balance in PIS&R's project portfolio, recognising regional and emerging sectoral opportunities. Withdrawal of investment will occur where such investment is inconsistent with PIS&R's R&D priorities, industry does not place a high priority on the investment or is unwilling to co-invest, stakeholders do not consider the investment a high priority, or there is no competitive advantage for NSW DPI investment.

The culture of pursuing external funding is well established within NSW DPI, and a high level of commercial awareness exists. The department currently derives nearly 50% of its research budget from external sources and it will continue to actively pursue commercial investment. Increasingly, it will pursue direct investment into the operations of its research centres from R & D corporations and stakeholder associations.

External funding processes will not be allowed to discourage collaboration amongst research providers because of a reluctance to share either the revenue stream and some or all of the intellectual property or the expertise and information bases that may otherwise be released into the public domain or commercialised.

Priority outcomes

- Strategic and flexible allocation of public research resources for the benefit of primary industries and the state.
- Science and research services reflecting government, industry and stakeholder investor priorities.
- High quality science and research through investment in the best scientists and functional, modern facilities.
- Intellectual property managed to ensure uptake of research and commercialised revenues supporting PIS&R services.
- Science underpinning public and industry policy.

PIS&R Strategies

Corporate strategy: Obtain stakeholder feedback to assess the level of alignment of NSW DPI services with stakeholder priorities.

- Establish effective linkages with stakeholder organisations to ensure agreement on research priorities and achieve joint investment in those priorities.
- Review selected areas of research investment to ensure future investment is aligned with Government and stakeholder needs.

Corporate strategy: Establish and implement a process to demonstrate that expenditure is aligned with stakeholder priorities.

- Ensure all research adopts world's best-practice standards and is prioritised according to key government and stakeholder needs.
- Implement rigorous scientific assessment and approval of all research proposals.
- Conduct economic evaluation of the costs and benefits and appropriateness of PIS&R's research programs.

Corporate strategy: Implement regulatory and educational programs as part of the department's obligations for animal welfare.

- Ensure all projects involving animals conform to the Animal Research Act and are approved by the Animal Ethics Committee.

Corporate strategy: Develop and implement a sound knowledge base to inform all NSW DPI policy, regulation and advice.

- Ensure scientific knowledge is provided as a key mechanism for delivering quality assurance on NSW DPI policy, regulation and advice.

Corporate strategy: Adopt sound workforce planning practices to meet current and future priorities.

- Adopt workforce planning practice to meet current and future primary industries science and research needs and priorities.
- Provide opportunities and mentoring of scientific staff to facilitate their acceptance and progression through appropriate performance-related scales.
- Implement incentive arrangements that value intellectual property and its commercialisation.

Corporate strategy: Coordinate and implement a corporate approach to promote the department's profile, products and services, and deliver high quality information to stakeholders.

- Focus PIS&R investments and services on key Centres of Excellence across NSW.
- Provide world-class biometrical support to scientists to ensure the integrity of NSW DPI's research programs through best possible experimental design, analysis and reporting.
- Provision of an international biometric consultancy service to capitalise on NSW DPI's intellectual property.
- Maintain laboratory response capability for outbreaks of exotic pests and diseases and chemical residues.
- Implement an effective Laboratory Information Management System linking the department's commercial laboratories in a single network which tracks samples, invoices clients and stores pest, disease and chemical residue information.
- Provide cost-effective, quality assured laboratory services to clients.

Performance indicators

- Five major strategic alliances established with universities by 2008.
- NSW DPI's participation in 17 current and any new CRCs demonstrated to yield major benefits to NSW.
- All PIS&R projects comply with approval, reporting and management guidelines and assurance protocols.
- NSW DPI research ranked in the top quartile based on the Institute for Scientific Information's Essential Science Indicators.
- Ten per cent increase in the proportion of scientists progressing through appropriate performance-related scales or on the Premier's Department Research Scientist Classification.
- All research laboratories quality assured.
- Diagnostic services at world's best practice providing an authoritative identification and information service for animal and plant pests and pathogenic organisms.
- Feed evaluation and oilseed testing services established and providing net revenues by 2008.
- Primary Industries Science and Research investment concentrated to key Centres of Excellence.
- Research and Development Corporation projects averaging 50% cost recovery by 2008.
- Full cost recovery of research where government and industry priorities are divergent.
- Aquaculture R&D review completed and recommendations implemented in 2006.

NSW Ministerial Advisory Council on Primary Industries Sciences

An external point of reference is provided by the Ministerial Advisory Council on Primary Industries Sciences, which comprises respected scientists and industry leaders. Its role is to advise on stakeholder science and research needs, alignment of the department's research portfolio, strategies to ensure delivery of research outcomes, and research reinvestment.

Reinvestment

NSW DPI is committed to a major reinvestment program into new facilities and technologies at its key research institutes and centres strategically located across regional and metropolitan NSW.

The program Towards 2020, announced by the Minister for Primary Industries in 2004, is based on funding from the sale of under-utilised, surplus or inappropriate assets.

The program will build the science and research capacity of NSW DPI through attracting and retaining a critical mass of the best scientists at modern, well-equipped and functional facilities. For example, many emerging issues such as new diseases and molecular genetics require investment in new technologies, more stringent control standards and better security.

Adoption of research

The department's structure provides a clear and decisive framework for science and research. Research projects will be developed and undertaken through cross-discipline teams that meet the needs of industry and government. Similarly, the outcomes of research will be delivered to the department's clients through an extensive network of education, advisory and regulatory staff located across regional NSW working hand-in-hand with industry and other key stakeholders. Agreements to support the department's investment in science and research will be developed with a range of agency, industry, corporation, and community stakeholder groups.

The future allocation of resources to research will be based on Framework for Investment, mentioned previously, which requires decisions according to the priority of the issue to stakeholders, the potential return on investment, and the capacity of the department to deliver. A process for project approval has been established to ensure consistency and quality assurance, and to facilitate dissemination and adoption of new technology and knowledge from research.

