BACKING AUSTRALIA'S ABILITY

AN INNOVATION ACTION PLAN FOR THE FUTURE

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foreword

Australians possess all the innate abilities to thrive in the coming century. We are a creative and determined people and when confronted with challenges and opportunities, we rise to the occasion.

Since winning office this Government has set about creating a climate in which such attitudes are encouraged and in which calculated risk-taking—having a go—is rewarded. The fundamental economic and industrial relations reforms of recent years provide firm foundations upon which Australians can build a prosperous future.

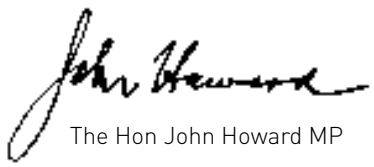
Yet a further key element of that success will be our capacity to generate new ideas and bring them to life as innovative and exciting new Australian products, services and businesses.

Backing Australia's Ability commits substantial additional money to the significant funding my Government already provides for science, research and innovation. This is evidence of our determination to back innovative Australians, build on known strengths, explore new opportunities and compete successfully with the best the world has to offer. It recognises that through the efforts of our scientists, researchers and entrepreneurial business leaders, all Australians will prosper.

This five-year strategy, developed with assistance from the business, education and scientific communities, builds on our earlier initiatives - including the *Investing for Growth* statement of December 1997, the higher education White Paper, *Knowledge and Innovation,* and the doubling of funding for health and medical research as part of the Government's response to *The Virtuous Cycle*, the report of the Health and Medical Research Strategic Review.

The Government believes that the strategy marks a significant step in harnessing the collective talent, energy and resources of all those dedicated to securing Australia's economic future, both within and outside Government. It represents a commitment to pursue excellence in research, science and technology, to build an even more highly skilled workforce and increase opportunities for the commercialisation of new ideas—in essence it is about backing Australia's ability.

We invite all Australians to join in this exciting era. A great challenge now exists for the community at large, and in particular those in business and the research sector, to capitalise on the opportunities created. Together, we can continue to build a nation where innovation and excellence thrives.



The Hon John Howard MP

Prime Minister

executive summary

The initiatives outlined in this strategy are the latest in a series of measures introduced by the Government to promote research, development and innovation. Their effectiveness will be all the greater because of the more general economic reforms initiated by the Howard Government to foster business growth and entrepreneurial activity.

Recent major steps to boost innovative activity have included -

- The *Investing for Growth* (December 1997) statement which increased support for business innovation by providing $1.26 billion over the four years from 1998-99, with additional funding for R&D grants, venture capital and technology diffusion.

- The *Knowledge and Innovation* (December 1999) statement which announced a new policy and funding framework for higher education research and research training.

- The Government's response to *The Virtuous Cycle*, the report of the Health and Medical Research Strategic Review, injecting a further $614 million into health and medical research over six years from 1999-00, which doubles the National Health and Medical Research Council's annual budget by the year 2005.

- Establishing Biotechnology Australia in 1999, and in July 2000 allocating an additional $30 million over 3 years for targeted biotechnology initiatives.

Such initiatives have seen the Government's current commitment to innovation increase in 2000-01 to $4.5 billion. However, more needs to be done in response to an increasingly competitive world environment and the recognition that success in the 21st century will depend predominantly on the innovative capacity of nations, their industries and their research and educational structures.

To this end *Backing Australia's Ability* provides a comprehensive and integrated package representing an additional Government investment of $2.9 billion over five years. It will fund major initiatives to stimulate innovation, including:

- providing an additional $736 million for Australian Research Council competitive grants, doubling funding by 2005-06;
- boosting research infrastructure funding by $583 million;
- committing an additional $176 million for world class centres of excellence in the key enabling technologies of Information and Communications Technologies (ICT) and biotechnology;
- providing $155 million to support investments in major national research facilities;
- continuing the R&D Start Program with funding of $535 million over five years;
- reforming the R&D tax concession including the provision of a premium rate of 175 per cent for additional R&D activity, and a tax rebate for small companies;
- expanding the Cooperative Research Centres Program with an additional $227 million and encouraging greater access by small and medium enterprises;
- increasing funding to universities by $151 million to create 2000 additional university places each year, with priority given to ICT, mathematics and science – to be backed by adjustments to existing immigration arrangements to attract more migrants with ICT skills; and
- delivering $130 million to foster scientific, mathematical and technological skills and innovation in government schools in those States where the Enrolment Benchmark Adjustment (EBA) is triggered.

It is estimated that the Government's investment of $2.9 billion will underpin business and research organisation expenditure of approximately $6 billion.

innovation

a key to future prosperity

This Government believes that innovation—developing skills, generating new ideas through research, and turning them into commercial success—is key to Australia's future prosperity. Innovation is not only the province of new or high tech industries, but also essential to the future of many of our traditional sectors such as agriculture, manufacturing and mining. The Howard Government is determined to ensure that innovation drives growth and we capitalise on the enormous potential of the new millennium.

Backing Australia's Ability outlines the next steps in the Government's strategy to encourage and support innovation and enhance Australia's international competitiveness, economic prosperity and social wellbeing.

Our success in these areas will reflect how well Government, business, education and research institutions work productively together to realise our national potential.

Government has two central roles – firstly to provide the best possible economic, tax and educational framework, and secondly to provide targeted direct support in areas where private sector funding is not appropriate or available.

Backing Australia's Ability reinforces the Government's long standing support for these roles. It reinvigorates the research base, and provides targeted support to drive commercial outcomes. Each initiative addresses a priority area and is designed to have maximum impact while being fiscally responsible.

An important element in continuing to enhance Australia's capacity for innovation will be the acceptance of responsibility by the private sector and educational and research institutions to work in partnership with Government in these key areas.

While past measures have resulted in record spending by the Government on innovation and related activities, it is clear that in the decades ahead, the importance of innovation to national prosperity will continue to grow rapidly. Consequently, in the 1998 election the Government committed to holding a summit on innovation.

In February 2000, the Government and the Business Council of Australia convened the National Innovation Summit attracting over 500 participants, to assess the strengths and weaknesses of Australia's innovation system, and formulate ways to improve performance in this area. It also sought to provide a framework to address innovation policy issues in a comprehensive and coordinated manner.

The Innovation Summit Communiqué recognised that Australia has done well in the past using our ingenuity and natural resources to build a strong and robust economy, but noted that Australia is now at a crossroad:

> *We are in the midst of a revolution from which a new order is emerging. The solutions of past decades will not suffice in the new knowledge age. Intangible assets—our human and intellectual capacity—are outstripping traditional assets—land, labour and capital—as the drivers of growth. If we are to take the high road, a road of high growth based on the value of our intellectual capital, we need to stimulate, nurture and reward creativity and entrepreneurship.*

Following the Summit, the Innovation Summit Implementation Group, a dedicated team chaired by Mr David Miles, developed the *Innovation—Unlocking the Future* report, which assessed and prioritised the Summit recommendations. It highlighted the need for Government, business, education and research organisations to work together to harness the potential that innovation offers.

Prior to the Summit, in August 1999 the Government commissioned Australia's Chief Scientist, Dr Robin Batterham, to review the effectiveness of our science, engineering and technology base in supporting innovation. A preliminary Discussion Paper was circulated for public comment, and the final report, *The Chance to Change*, was presented to Government in November 2000.

In December 1999 the Government released its higher education White Paper, *Knowledge and Innovation: a policy statement on research and research training*, announcing a new policy and funding framework designed to ensure that universities were well placed to contribute knowledge and ideas to, and educate researchers for, the national innovation system.

Under the Prime Minister's chairmanship, his Science, Engineering and Innovation Council (PMSEIC) has also prepared a series of working papers and reports on priority issues to improve Australia's innovation performance.

These documents have all played a crucial role in the Government's examination of our innovation system and were fundamental in developing important elements of *Backing Australia's Ability.*

A Ministerial Taskforce, comprising Nick Minchin, Minister for Industry, Science and Resources, David Kemp, Minister for Education, Training and Youth Affairs, and Richard Alston, Minister for Communications, Information Technology and the Arts, was tasked with overseeing the development of this strategy and achieving an appropriate balance between competing priorities.

where we are today

In large measure, the success of *Backing Australia's Ability* will be underpinned by the Commonwealth Government's achievement in providing an economic climate in which innovation can thrive. The fundamental economic reforms of recent years have created a dynamic and competitive economic environment with high growth, low inflation and high productivity environment—the right framework for innovation.

Economic growth has averaged 3½ per cent over the last decade and over 4½ per cent in the last three financial years, while the average rate of inflation in the 1990s was 2¼ per cent. Australia's recent strong economic growth has been underpinned by impressive employment and productivity performances – the result of pursuing sound macro-economic policies and undertaking a comprehensive range of structural reforms in both product and labour markets.

The OECD and the US Federal Reserve have found Australia's productivity performance to be particularly impressive. For example, the OECD identified Australia as one of only six OECD economies to have raised its trend real per capita growth rate in the 1990s.

The Government has introduced a range of tax reforms that provide Australia with an internationally competitive tax system. From 1 July 2001, Australia's company tax rate will be one of the lowest rates in the region and the goods and services tax (GST) has replaced an inefficient and multi-layered indirect taxation system.

The new capital gains tax (CGT) system will encourage entrepreneurial behaviour (including risk taking), improve the incentives to save and invest and increase the ability of start-up and innovative enterprises to attract and manage capital. In the year following the introduction of these reforms, nearly twice as much venture capital was invested in Australian companies.

Australia's workplace relations reforms provide a flexible labour market with the capacity to realise the benefits and opportunities of jobs in emerging industries while improving the efficiency of more established industries. For example, the increased focus on workplace agreements provides greater scope for employers and employees to share the rewards of their firm's performance, encouraging increased productivity and a culture of continuous improvement and innovation.

Australia has a world-class financial sector regulatory framework, which is sound, secure, and sufficiently flexible to keep pace with the rapidly changing global financial sector. This regulatory framework is designed to support greater innovation, competition and efficiency, while maintaining financial sector stability, integrity and fairness.

Over the past few decades, Australia has made a major transition to become one of the world's most open economies. We have also introduced competition in key infrastructure sectors, including telecommunications, formerly dominated by public monopoly providers. This reform has delivered cost reductions for business through increased efficiency and greater competitiveness.

Overall, these changes have contributed to creating a high growth, high productivity, and low inflation economy - the ideal climate for innovation. The economic outlook remains very positive, with continued robust economic growth, inflation in check and unemployment at its lowest rate in more than a decade.

our track record

Australian productivity, competitiveness and innovative capacity have also been enhanced by direct Federal Government support over recent years. The Government has provided approximately $4.5 billion funding for innovation in 2000–01 alone. This includes a record $2.7 billion for science, research and industry innovation programs and $1.8 billion for higher education research and research training. In addition this government has launched innovation programs targeted at the ICT sector with a total value of $189 million.

The Innovation Investment Fund (IIF), which was introduced to stimulate overseas and domestic early-stage venture capital investment in new technology, is successfully attracting significant amounts of new early stage capital for Australian companies.

A joint Industry-Government investment of $1.5 billion made over the past five years through rural R&D corporations maintains the place of Australia's primary industries as among the best in the world. The Government's continued commitment to this Industry-Government partnership will continue to strengthen our rural economy.

The Government supports the establishment and rapid growth of innovative small and medium sized businesses in the ICT sector. Initiatives include: the Building on IT Strengths (BITS) program, which supports incubator centres, test-beds and advanced infrastructures; the IT Online (ITOL) program, which encourages business to adopt e-commerce; the IT Skills Exchange which addresses skills shortages and facilitates training; and the Software Engineering Quality Centres program, which helps software developers improve their product quality.

The Commonwealth is also leading by example with the Government Online Strategy, which aims to see all appropriate Commonwealth services online this year.

Other specific initiatives have laid vital groundwork in developing new economy skills. The Government's *Investing for Growth* (1997) statement introduced programs to boost the innovative capacity of firms, as a key strategy to lift Australia's international competitiveness.

The implementation of the new funding and policy framework for higher education research and research training announced in *Knowledge and Innovation* is proceeding, with improvements in the quality of research training, more strategic identification of research strengths and greater collaboration between universities and industry already apparent.

The recommendations contained within the Wills report *Health and Medical Research Strategic Review,* along with the Government's 1999 decision to double base funding for the NH&MRC by an additional $614m by 2005, will allow Australia to build on its already strong reputation as a leader in health and medical research.

our future

Backing Australia's Ability has been developed with full understanding of our current strengths and weaknesses, recognition of relevant national and international factors and a comprehensive assessment of likely conditions in the future.

This strategy supports the essential ingredients for a dynamic and productive innovation system. It focuses on the Government's commitment to three key elements in the innovation process:

- strengthening our ability to generate ideas and undertake research;
- accelerating the commercial application of these ideas; and
- developing and retaining Australian skills.

The Government's strategy builds on existing substantial Commonwealth support for innovation by boosting funding to key areas and introducing significant new initiatives. *Backing Australia's Ability* provides $2.9 billion of additional funding over 5 years, with $159 million in the first year growing to $947 million in 2005-06. It also identifies areas for ongoing review and future action.

strengthening our ability to generate ideas and undertake research

A key aim of the strategy is to strengthen Australia's research capability, to ensure the flow of new ideas which underpin innovation, to create critical mass in leading research fields, and to build competitive advantage in ICT and biotechnology.

The strategy provides significant new investment in these areas including additional funding and incentives to ensure Australia's research base—the backbone of the innovation system—remains strong and internationally competitive.

Our R&D activity will be strengthened with extra funding for research grants, enhanced research infrastructure and facilities, and Centres of Excellence in ICT and biotechnology.

The Government is introducing significant incentives to stimulate increased business investment in R&D. Initiatives include new tax concessions to encourage companies to increase R&D efforts, a rebate to assist small companies to undertake R&D and continued direct grant assistance.

Specific initiatives include -

- To support internationally competitive research, the Government will double funding over the next 5 years for the national competitive research grants administered by the Australian Research Council (ARC). The extra $736 million will improve the competitiveness of researchers' salaries and increase the support available under the Discovery and Linkage elements of the grants program. Emphasis will be on areas in which Australia enjoys, or wants to build, a competitive advantage.

- To provide the infrastructure needed to support project-funded research, the Government will provide more than $337 million towards increased project-specific infrastructure over the next five years. This will support ARC and National Health and Medical Research Council grants.

- To upgrade the basic infrastructure of universities, such as scientific and research equipment, libraries and laboratory facilities, $246 million over the next five years will be provided to fund the best infrastructure proposals from universities.

- To ensure Australia participates in key emerging technologies, a total of $176 million will be provided (with approximately half contributed from the ARC) over the next five years to establish Centres of Excellence in ICT and biotechnology. With strong industry participation, these centres will undertake world-class R&D, focussing on commercialisation and encouraging spin-off companies.

- To provide researchers with the most up-to-date equipment and facilities the Government will provide $155 million towards establishing collaborative Major National Research Facilities.

- To provide a significant incentive for business to increase their R&D investment, the Government has enhanced the R&D tax concession arrangements. In addition to the existing 125 per cent R&D tax concession, companies that undertake additional R&D will be able to access a premium rate of 175 per cent on the additional investment. This premium targets the labour-related components of R&D expenditure where the greatest benefits for the whole economy occur.

  In accordance with the approach taken to business tax reform, effective-life write off will apply to the Government's existing R&D tax concession scheme. This will simplify the application of the scheme and provide a consistent treatment between R&D plant and other capital items in the tax system. The Government is also introducing changes to the definition of R&D.

Businesses will also be aware that in the coming months a final ATO ruling may be promulgated, dealing with the application of the R&D concession to experimental plant which is also used for production purposes.

The reform of the existing R&D concession scheme will address possible negative effects of this ruling on partial use of future plant, if it were to be promulgated. It will allow future experimental plant which is also used for production purposes to receive depreciation deductions at 125 per cent during the R&D phase. This will ensure that the commercial realities surrounding the conduct of R&D activities are dealt with more adequately.

Overall, it is estimated that the Government's reform of the R&D tax concession scheme will cost $115 million over five years.

OECD data indicate that these changes will provide Australia with one of the best tax based R&D support mechanisms of member countries.

- To help the cash flow of small companies, the Government will introduce a tax rebate for the R&D tax concession. Over five years, up to 1300 small companies that are in tax loss will get early access to $30 million at a net cost of $13 million.

- To support the hundreds of companies where grant assistance is most appropriate the Government will provide $535 million over five years to continue the START program (which would have otherwise expired), as well as streamline the program and make it easier to access to better meet the needs of business users.

accelerating the commercial application of ideas

Backing Australia's Ability supports greater commercial application of research results. In addition to direct support for R&D, the Government aims to improve the flow of finance into business innovation and to stimulate growth of innovative firms by improving Australia's capacity to commercialise research and new technologies.

This will also be achieved through initiatives to enhance Australia's capacity to build and manage innovative enterprises, encourage the spin-off opportunities from industry research collaboration, strengthen our intellectual property (IP) management processes and increase access to global research and technologies.

Backing Australia's Ability assists the greater commercial application of research from universities and public sector research agencies, like the CSIRO, by strengthening the commercial linkages with industry and making it easier to take promising research to the stage of commercial viability.

Specific initiatives include -

- To continue and enhance the spin-off opportunities from industry research collaboration, the Government will boost the Cooperative Research Centres (CRC) Program by 80 per cent over the next five years at a cost of $227 million. More flexibility will also be incorporated so larger CRCs can be established and small and medium enterprises are provided with greater access to the program.

- To provide early assistance to firms by improving their commercialisation skills, the highly successful Commercialising Emerging Technologies (COMET) Program will be more than doubled in value, with an extra $40 million over four years.

- To ensure access to the best overseas technology and science, the Government will provide $100 million over the next five years for an Innovation Access Program. The new program will enhance Australian firms' access to new technologies, and accelerate the use of e-commerce business solutions, especially for small and medium enterprises. It will also showcase Australian science and technology overseas and develop international bilateral agreements that support strategic science and technology.

- To help commercialise public sector research the Government will provide $78.7 million over the next five years as pre-seed funding. Assistance through the fund will be available to universities and public sector research agencies to take proposals to a venture capital ready stage.

- To encourage the development of new biotechnology firms, the Government will double the Biotechnology Innovation Fund, with an additional $20 million.

- To accelerate efforts to improve Australia's performance in the development and commercialisation of new agribusiness products, services and technologies, an additional $21.7 million over five years will be committed to the New Industries Development Program.

- To ensure that recent changes to the tax system will encourage venture capital investment, the Government will actively monitor the impacts of the new business tax arrangements, in particular entity taxation, on domestic and overseas investment in Australian venture capital.

- To ensure Australia has a regulatory environment that allows us to maximise the outcomes of innovation, the Government will develop regulation business advice tools and review the regulatory framework to determine how it can be improved.

- To strengthen Australia's IP protection system, the Government will continue to increase awareness and understanding of IP—for example by developing an IP Internet portal, improving IP management in public research agencies, and quickly implementing IP reforms such as introducing a 'grace period' to the Patents Act and acceding to the Madrid agreement regarding international registration of trade marks.

developing and retaining Australian skills

To be competitive in today's world, Australia must develop its strong research base and encourage further collaboration with the world's best. We need to continue to enhance our own local expertise and skills, and to attract further overseas interest, talent and investment.

Our well-educated and culturally diverse society provides a rich environment for generating original and groundbreaking ideas.

We can build further on this by strengthening our skills base, and encouraging a wider interest in science, mathematics and technology, through measures designed to excite and retain Australian researchers, by attracting increased business support and developing the next generation of innovators.

The Government's broad strategy in this area increases university places in critical fields, supports ongoing skills development and enhanced science and technology literacy, provides for increased access to online learning opportunities, and further boost our skills base through immigration. New Federation Fellowships will create new rewards and incentives for our leading researchers to apply their talents in Australia.

The strategy addresses the challenge to build Australia's capacity in key enabling technologies (such as ICT and biotechnology), not only for the growth and employment opportunities, but also so that Australia continues to be competitive in rapidly changing global markets. The expanding global market for these technologies is an engine for growth, providing jobs, rejuvenating traditional industries and creating new ones.

Specific initiatives include -

- To increase the number of graduates in areas where Australia faces shortages, the Government will provide $151 million over five years for an additional 2 000 university places each year, with priority given to ICT, mathematics and science.

- To encourage lifelong learning and to help Australians upgrade and acquire new skills, the Government will establish an income-contingent loan scheme for postgraduate fee-paying students. It is expected that the loans provided under this scheme will amount to some $995 million over the next five years.

- To attract and retain leading researchers in key positions, part of the new funds to be provided for national competitive research grants will be used to introduce 25 new Federation Fellowships worth $225,000 a year for five years. In addition, the number of Australian Postdoctoral Fellowships will be doubled from 55 to 110 and remuneration of these positions will be improved.

- To foster scientific, mathematical and technological skills, develop school based innovation and build supportive school environments, the Government will provide, in those States where the Enrolment Benchmark Adjustment (EBA) is triggered, an additional $130 million over four years to government schools.

- To enhance student access to quality learning opportunities and provide experience of ICT as a learning tool, $34 million over five years will be provided to help develop online curriculum content in schools.

- To help meet the demand for ICT skills, the Government will adjust immigration arrangements to attract more migrants with skills in ICT.

- To raise the understanding of the importance and commercial potential of science and technology, particularly amongst the young, $35 million will be provided over five years to implement a National Innovation Awareness Strategy, including the development of new ways to measure our national innovation performance.

going

forward

A high-level committee comprising the Prime Minister, the Minister for Industry, Science and Resources, the Minister for Communications, Information Technology and the Arts, the Minister for Education, Training and Youth Affairs and the Minister for Finance and Administration will be established to oversee the implementation *of Backing Australia's Ability*, with an annual progress report provided in the Science & Technology Budget Statement. The Chief Scientist and relevant Government departments will provide advice to the committee.

The achievement of outcomes will be monitored through ongoing assessment of individual initiatives and their use of funds through regular program reviews – for example, regular review mechanisms exist for the Australian Research Council, the Cooperative Research Centres program, the R&D Tax Concession and other innovation outlay programs.

strategies for longer-term outcomes

The initiatives outlined in this strategy address immediate priorities to strengthen Australia's innovation capabilities. However, the Government recognises that further reforms may be desirable to support these initiatives in the longer-term.

As part of its ongoing commitment to *Backing Australia's Ability*, the Ministerial Committee will examine a number of areas to ensure that relevant policies provide the most effective support for R&D, its commercial application and skills development.

Specific areas include -

- To ensure that the commercialisation of Government-funded research in Australia matches the world's best, the Government will examine barriers to commercialisation, and assess the effectiveness of current incentives. This will identify where stronger incentives are needed, for example, to increase the development of patents from scientific research by publicly funded institutions.

- To enhance the incentives for employees to drive stronger business productivity and to encourage start-up business activity, employee share ownership arrangements will be examined. This responds to the *Shared Endeavours: Inquiry into employee share ownership in Australian enterprises* report of by the House of Representatives Standing Committee on Employment, Education and Workplace Relations, which advocated extending employee share ownership schemes in small and medium unlisted companies, and companies in sunrise and new industries.

- To ensure that talented young people are attracted to teaching as a career, especially in the fields of science and technology education, teaching and teacher education will be reviewed, in consultation with State and Territory Governments.

- To ensure that funds support the highest quality research, there will be a review of access to Government-funded research by public sector research agencies.

- To develop the community's understanding of, and support for, innovation to bring it in line with our competitor countries, the Government will examine ways to increase philanthropic support for innovation.

- To create a flexible workforce which is responsive to changes, the Government will develop strategies to support lifelong learning so Australian ideas and inventiveness are nourished through continual updating of knowledge and skills.

- To encourage more consumers and businesses to take up online technologies, the Government will introduce measures that provide more equitable and affordable online access.

The Prime Minister's Science, Engineering and Innovation Council—the principal source of independent advice to Government on science, engineering and innovation matters and relevant aspects of education and training—will continue to contribute to the future Innovation agenda.

accessing

the programs and further information

Fact Sheets highlighting features of the initiatives in *Backing Australia's Ability*, including direct contacts for programs, can be obtained by contacting:

www.innovation.gov.au

The Department of Industry, Science and Resources

www.isr.gov.au

(+61) 02-6213-6000

The Department of Education, Training and Youth Affairs

www.detya.gov.au

(+61) 02-6240-8111

The Department of Communication, Information Technology and the Arts

www.dcita.gov.au

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Agriculture, Fisheries and Forestry Australia

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