OUTCOME 3

Australia has a strong science, research and innovation capacity and is engaged internationally on science, education and training to advance our social development and economic growth.

DESCRIPTION

A strong national and internationally connected science, education, research and innovation capacity is critical to Australia's economic and social development. Investment and effort is being focused on strengthening Australia's ability to generate ideas and undertake research, to accelerate the commercialisation of reseach outcomes and to develop and retain the skills of those people involved in the science, research and innovation system.

International engagement is essential to effectively utilise knowledge and innovation produced in Australia and elsewhere. It promotes innovation, develops people-to-people links and underpins Australia's competitiveness, trade, skilled migration, foreign relations and national security. Government-to-government activities, including memoranda of understanding, and engagement with multilateral forums play an important role in paving the way for such engagement.

Australia's science, research and innovation system is diverse, pluralistic and decentralised. It includes Australian Government departments, research agencies and organisations, universities, industry, private research organisations, health and medical research laboratories and organisations, industry research and development organisations and state research agencies. The Australian Government has established a number of whole of government or multi-portfolio decision making and coordination mechanisms; there is a strong emphasis on credible and consistent performance and it encourages collaboration. A key role is promoting the development of underpinning structures and infrastructure to support research.

Backing Australia's Ability—Building Our Future through Science and Innovation is a seven-year strategy for research and innovation. The package continues the Australian Government's policy goal of strengthening Australia's ability to generate ideas and undertake research, accelerating the commercialisation of research outcomes, and developing and retaining skills.

The Australian Government's four national research priorities identify areas that are crucial to Australia's future economic, environmental and social well being. The priorities are: An environmentally sustainable Australia; Promoting and Maintaining Good Health; Frontier Technologies for Building and Transforming Australian Industries; and Safeguarding Australia.

Questacon - The National Science and Technology Centre - is the national leader in engaging people in science and technology. To achieve its aim of promoting greater understanding and awareness of science and technology within the community, Questacon has over 200 exhibits and approximately 300,000 people visit the Centre in Canberra each year. Questacon communicates the fun and relevance of science

through interactive exhibits, travelling programmes and science performances at the Centre in Canberra, as well as an extensive external programme covering metropolitan areas, rural, regional and remote locations and overseas. It supports science learning in schools through programmes and resources as well as a science communication perspective.

Australia's international education activities are also diverse. International education activity contributed some $7.5 billion in education exports and other national income in 2004. All sectors of the education system are involved, including both public and private providers; there are onshore and offshore activities involving international and domestic students, researchers and educational professionals.

A key role is facilitating a sustainable education and training export industry through collaboration with other government departments and agencies, industry providers and State and Territory governments. Australian Education International (AEI) works through an extensive offshore network to directly promote and market the quality and expertise of Australian education, science and training. This role includes extensive government to government relationship building and participation in fora to negotiate Australia's education interests. A number of Memoranda of Understanding are in place with key country partners. AEI represents the Australian Government in several Joint Working Groups (JWGs) to further pursue recognition of Australia's education systems and qualifications, and to open opportunities for linking with the education industry. AEI is also instrumental in positioning Australia's education exports as high quality educational experiences through its extensive support for the Study-in-Australia brand, both on- and offshore. It delivers services through a network of offshore offices in 15 countries and extends its reach through partnership with Austrade.

The regulatory framework provided under the *Education Services for Overseas Students (ESOS) Act 2000*, the Commonwealth Register of Institutions and Courses for Overseas Students (CRICOS) and the National Code assures the quality and sustainability of the education and training industry for overseas students studying in Australia. The National Office of Overseas Skills Recognition provides a coherent framework for skills and qualifications recognition in collaboration with professional associations and other industry partners. This work supports Australia's Skilled Migration Programme as well as Australia's education and training export industry. The Australian Government also works to establish both bilateral and multi-lateral mutual recognition arrangements.

STRATEGIC PRIORITIES

The Department's medium term strategic priorities for Outcome 3 are to:

10. Strengthen Australia's ability to generate and use new knowledge;

11. Enhance research and development in key national priority areas;

12. Enhance innovation performance through a strengthened science and technology base;

13. Develop facilities to safely manage Australia's low and intermediate level radioactive waste;

14. Strengthen and diversify national and international linkages and collaboration;

15. Raise international recognition of the quality of Australia's education, research and training; and

16. Encourage life-long engagement with science and technology

Strategic Priorities 1-4 are under Outcome 1; Strategic Priorities 5-9 are under Outcome 2.

Strategic Priority 10: Strengthen Australia's ability to generate and use new knowledge.

The Department provides funding to support the ability of universities and other Publicly Funded Research Agencies (PFRA), to engage in world-leading research. Investment by the Australian Government in research is significant, including around $1 billion of funding allocated by the Department in support of research and research training in Australia's universities. Funding for universities is allocated by a performance-based formula to underpin research capabilities and encourage innovation.

The Australian Government is committed to the 1999 *Knowledge and Innovation* reforms to higher education research. A key focus remains on implementation of decisions arising from the 2003 evaluation.

There is also a major effort underway during 2005 to develop Quality and Access ability Frameworks covering university and PFRA research.

The provision of effective information and communications technology, particularly telecommunications bandwidth, also contributes significantly to the sector's ability to generate and use new knowledge. The Department will be continuing its efforts to ensure Australia's research sector has a world leading electronic infrastructure to support its activities.

The ability to generate and use new knowledge is demonstrated by universities through their ability to win competitive research grants and undertake contract research and development, and through their contribution to the stock of knowledge, including as measured by research publications and patents. The Department also encourages universities to be active partners with other universities and research institutions and enterprises to leverage Australia's research base and to facilitate the flow of knowledge, people and expertise, both locally and internationally.

As part of *Backing Australia's Ability: Building Our Future through Science and Innovation*, the Department will continue to develop the National Collaborative Research Infrastructure Strategy (NCRIS). NCRIS will provide a coordinated approach to the Government's funding of the major research facilities, and support infrastructure and networks necessary for world-class research. NCRIS will build on the major programme of investments currently being made through the Systemic Infrastructure Initiative and the Major National Research Facilities Programme. An Advisory Committee has been established to advise the Minister on NCRIS progress, consult with public and private sector stakeholders and develop a 'Strategic Roadmap' to identify areas in which investments in research infrastructure would enhance the capacity of Australia's research and innovation system in delivering national benefits.

Strategic Priority 11: Enhance research and development in key national priority areas.

The Government announced four National Research Priorities in late 2002. These are areas of particular social, economic and environmental importance to Australia, and areas in which a whole-of-government focus has the potential to improve research and broader policy outcomes. The setting of research priorities is expected to result in significant long term benefits to Australia by increasing research effort in key areas. The four National Research Priorities are broadly based, thematic, multidisciplinary in nature and underpinned by a number of priority goals. The priority goals were enhanced during 2003 to strengthen the contributions of social sciences and humanities research.

The Education, Science and Training portfolio is responsible for coordinating, monitoring and reporting upon progress achieved by Australian Government research agencies and funding bodies in supporting the national research priorities. It is also required to ensure that the research priorities are implemented within the Cooperative Research Centres Programme, International Science Linkages Programme and the Science Connections Programme.

A National Research Priority Standing Committee was established in February 2005. Chaired by the Chief Scientist, during 2005-06 the Committee will assess the progress of government agencies in their implementation of the priorities, report to the Australian Government on that progress, and develop the longer-term policy associated with the National Research Priorities.

Strategic Priority 12: Enhance innovation performance through a strengthened science and technology base.

A strong science and technology base is a critical determinant of Australia's overall innovation performance. The Department is acting to strengthen Australia's science and technology base through the whole of government policy framework articulated in Backing Australia's Ability and reaffirmed in Backing Australia's Ability - *Building our Future through Science and Innovation*. In particular, the Department has a leadership role in overseeing and coordinating the implementation of the $5.3 billion Backing Australia's Ability - *Building our Future through Science and Innovation* package.

Following the 2004 Cooperative Research Centres Selection Round, new Centres with a focus on contributing to Australia's industrial, commercial and economic growth will be established in 2005-06. A priority for the Department will be finalising arrangements for the 2006 Selection Round.

Raising awareness of science and innovation and its importance to the Australian community, particularly young people, is a focus for the Department. The Science Connections Programme will support a range of awareness raising activities during 2005-06, notably the Prime Minister's Prizes for Science which acknowledge the work of our world class scientists and our outstanding science teachers. Other significant activities supported by this programme include National Science Week, the Australian Science and Mathematics Olympiads, ABC Science (including the science website "the Lab") and promotion, in 2005, of the International Year of Physics.

Strategic Priority 13: Develop facilities to safely manage Australia's low and intermediate level radioactive waste.

The Department is pursuing the establishment of a facility to manage low and intermediate level radioactive waste generated by Australian Government agencies, consistent with the announcement made by the Prime Minister in July 2004.

Strategic Priority 14: Strengthen and diversify national and international linkages and collaboration.

The Department develops strong bilateral, multilateral and regional relationships to enhance international cooperation, to facilitate the exchange of ideas and expertise with other countries and to create opportunities for collaboration both domestically and internationally. The Department seeks to strengthen linkages and collaboration through a whole of government policy framework and programmes promoting Australia's education and training services; and to facilitate the commercialisation of research and showcase Australian science and technology.

The Department will facilitate scientific and technological collaborative activities and projects through the International Science Linkages Programme, which is targeted at priority countries and supports collaboration between Australian researchers and leading international colleagues in areas within the National Research Priorities. Key activities include:

- participation in international workshops, bilateral meetings and showcasing events; and

- the active management of science and technology relationships, including formal agreement, with over 25 countries on behalf of the Australian Government. In 2005-06:

    - key science and technology meetings will take place with: Japan, China, the European Union, South Africa, and New Zealand, and

- the Department expects to conclude formal Science and Technology cooperation agreements with the USA, South Africa and Indonesia.

The Department will actively engage in key science and technology work of the Organisation for Economic Co-operation and Development (OECD), and Asia-Pacific Economic Co-operation (APEC). In March 2006, Australia expects to host a meeting of the OECD Committee for Science and Technology Policy in Sydney.

The Department has significantly increased the promotion of education and training in recent years to strengthen Australia's position within the changing international education market. In particular, it is focused on diversifying the markets to which Australia exports education and training services and increasing the reach and effectiveness of current activities. Additional DEST Counsellors have been deployed in regions of emerging importance. The expanded network of offshore Counsellors will provide a significantly greater capacity in 2005-06 to promote Australian education and training services, undertake government-to-government activities and facilitate trade opportunities for Australian education and training providers. Industry performance will be enhanced and diversified through the expanded and improved provision of information services to industry and potential students.

The Department is pursuing elimination of education and training trade barriers through a variety of multilateral forums and bilateral agreements and a number of other international education initiatives. This includes seeking support and commitments from other countries through regional forums. The Department also focuses on increasing international mobility through qualifications recognition arrangements, particularly in our region.

With the establishment of new Counsellor positions in Europe and the United States, further work is planned to progress the establishment of formal education and training agreements with the European Union (EU) and the United States to enhance research collaboration and information exchange.

A Memorandum of Understanding has been signed with Austrade to facilitate Australia's international positioning and export success through a partnership which operates under a common policy framework.

Strategic Priority 15: Raise international recognition of the quality of Australia's education, research and training.

The long term sustainability of Australia's education and training export industry is underpinned by the quality of the education provided to overseas students, both on- and offshore and extending Australian education and training activities internationally.

The Department facilitates international recognition of Australian qualifications standards, provides advice on overseas skills assessment and recognition, ensures that the regulatory framework for the education and training export industry is effective and promotes Australia's education, research and training capability.

The Department has increased monitoring and enforcement activity in relation to providers enrolling and teaching students in Australia on student visas to ensure provider compliance with the *ESOS Act*, and remove any providers breaching it. Such action will continue to protect Australia's international reputation. In addition, the Department is continuing to work with industry to explore and develop a framework to assure the quality of education and training services offered by Australian providers outside Australia. This will involve developing an internationally applicable quality assurance process to certify that offshore providers delivering Australian programmes and qualifications overseas meet certain requirements.

The Department will continue to support initiatives to foster international engagement, including:

- the Endeavour Programme which attracts high-performing overseas students to study in Australia and also provides research fellowships and exchange opportunities for Australian scholars and students and fellowships for Australian language teachers to undertake short-term study tours overseas; and

- a National Centre for Language Training to help business, the tourism industry, teachers and other professionals acquire skills to support their activities internationally through specialist immersion language and business culture training.

Wide acceptance and use of the *Study in Australia* brand positioning and methodology by Australian education and training providers in their international promotion of Australian education and training services is an important mechanism in achieving increased international recognition of Australian qualifications and standards, and of Australia's education, research and training capability.

The Department is also showcasing Australian excellence in education, science and innovation through five International Centres of Excellence in Asia Pacific Studies and Asia-Pacific College of Diplomacy; Education in Mathematics; Tourism and Hospitality Education; Sports Science and Management; and Water Resources Management.

The Department will operate under a multi-lateral Memorandum of Understanding across Australian Government portfolios to encourage a whole of government approach to promoting the capability of Australian education and training internationally.

Strategic Priority 16: Encourage life-long engagement with science and technology.

Questacon, the National Science and Technology Centre, increases awareness and understanding of science and innovation through imaginative and inspirational learning experiences.

Questacon's innovative programmes and exhibitions are developed in response to the Government's strategic priorities, its innovation agenda and stakeholder feedback. Interactive exhibits, travelling programmes run by skilled science communicators, on-

line content and science theatre are delivered at the Centre in Canberra and extensively across Australia and overseas, with particular emphasis on rural, regional and remote locations.

In developing its national role in communicating science, Questacon builds partnerships in science communication with the broader science community, industry and education providers. It works to deliver programmes aimed at supporting science learning in schools and encouraging life long learning in the wider community.

Outcome 3 resourcing

Table 3.1.3 shows how the 2005-06 Budget appropriations translate to total resourcing for Outcome 3, including administered expenses, revenue from government (appropriation), revenue from other sources (Departmental) and the total price of outputs.

Table 3.1.3: Total resources for Outcome 3 ($'000)

	Estimated Actual 2004-05 $'000	**Budget Estimate 2005-06 $'000**
Administered appropriations		
Output Group 3.1 - Research infrastructure	527,675	**599,285**
Output Group 3.2 - Assistance for collaboration and innovation	253,106	**265,042**
Output Group 3.3 - Support for the Australian education and training export industry and international relationships	24,913	**22,112**
Output Group 3.4 - National leadership in engaging people in science and technology	0	**0**
Revenue from other sources		
Administered	622	**611**
Total administered appropriations and other revenue	806,316	**887,050**
Departmental appropriations		
Output Group 3.1 - Research infrastructure	3,594	**3,623**
Output Group 3.2 - Assistance for collaboration and innovation	17,967	**18,890**
Output Group 3.3 - Support for the Australian education and training export industry and international relationships	38,333	**37,397**
Output Group 3.4 - National leadership in engaging people in science and technology	10,109	**10,280**
Total revenue from government (appropriations) contributing to price of departmental outputs	70,003	**70,190**
Revenue from other sources		
Departmental	22,227	**22,605**
Total price from departmental outputs (Total revenue from government and from other sources)	92,230	**92,795**
Total estimated resourcing for Outcome 3 (Total price of outputs and administered appropriations)	898,546	**979,845**
Average staffing level (number)	642	**680**

1 Flows into Special Accounts are also shown in the receipts column of the Special Accounts table in Table 2.6.
2 Special Account outflows are shown in the payments column of the Special Account table in Table 2.6. The estimated payments from special account balances are provided by way of note only and do not form part of the total estimated resourcing.
3 Where names of Acts have been abbreviated, the full name of the Act can be found in the Acts Glossary at the end of Table 2.6.

Administered Expenses by Item – Outcome 3

	Estimated Actual 2004-05 $'000	Budget Estimate 2005-06 $'000
Output 3.1		
Higher Education Funding Act 1988 & Higher Education Support Act 2003	522,370	**578,687**
Grants-in-Aid - Educational and Research Associations	17	**-**
Grants for Learned Academies	893	**-**
Research Evaluation Programme	283	**-**
Anglo-Australian Telescope Board	4,112	**4,594**
Collaborative Research and Infrastructure	-	**13,151**
Framework for Open Learning	-	**2,853**
Total 3.1	*527,675*	***599,285***
Output 3.2		
Co-operative Research Centres	193,989	**208,197**
Major National Research Facilities	42,259	**42,308**
National Radioactive Waste Management	6,758	**3,211**
Defence of Common Law - Atomic Tests (RRWM)	543	**543**
Innovation Access	9,307	**10,190**
Science Connections	250	**593**
Total 3.2	*253,106*	***265,042***
Output 3.3		
International Education and Training	24,228	**21,411**
Assessment Fee Subsidy for Overseas Trained Australian Residents (ASDOT)	685	**701**
Total 3.3	*24,913*	***22,112***
TOTAL OUTCOME 3	805,694	**886,439**

Measures affecting Outcome 3[1]

Commonwealth Radioactive Waste Management Facility
Expense ($m)

	2005-06	2006-07	2007-08	2008-09
Department of Education, Science and Training	3.4	7.1	2.6	0.0

Providing for Australia's Security – Australian overseas diplomatic missions – improved security
Expense ($m)

	2005-06	2006-07	2007-08	2008-09
Department of Education, Science and Training	0.029	0.1	0.1	0.1

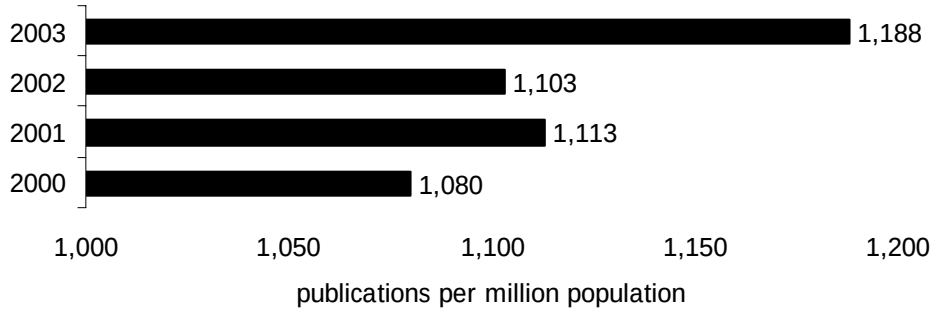
[1] Further details of measures are published in Budget Paper No. 2.

Performance information for Outcome 3

Effectiveness in Achieving the Outcome

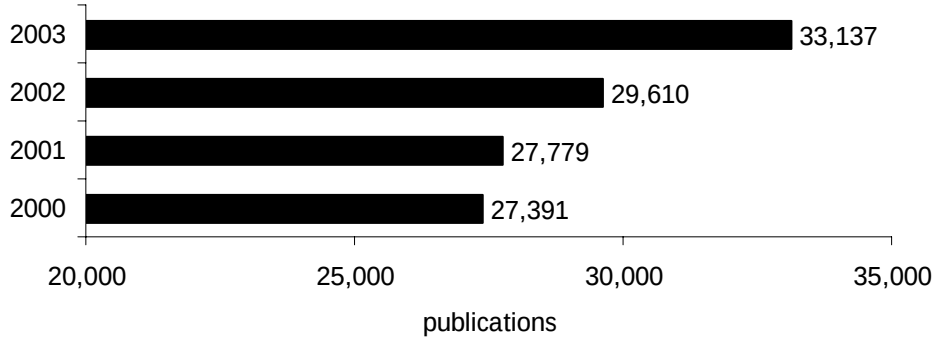
Effectiveness Indicator: Research publications

Graph 3.1: Number of scientific and technical publications per million population



Source: Thomson ISI, *National Science Indicators database 1981-2003*

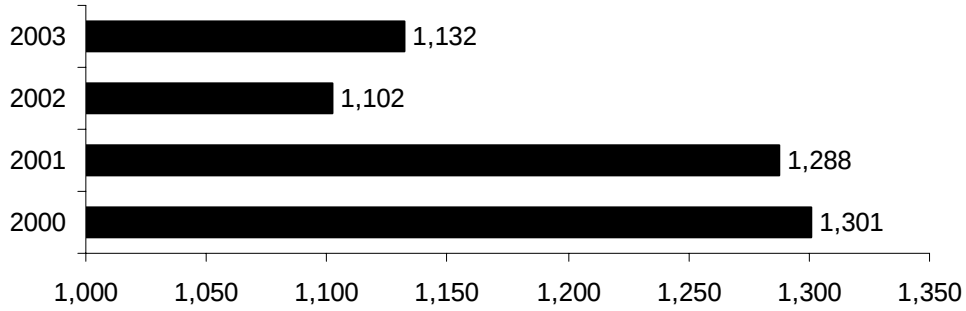
Graph 3.2: Number of research publications in the higher education sector



Source: DEST

Effectiveness Indicator: Patents

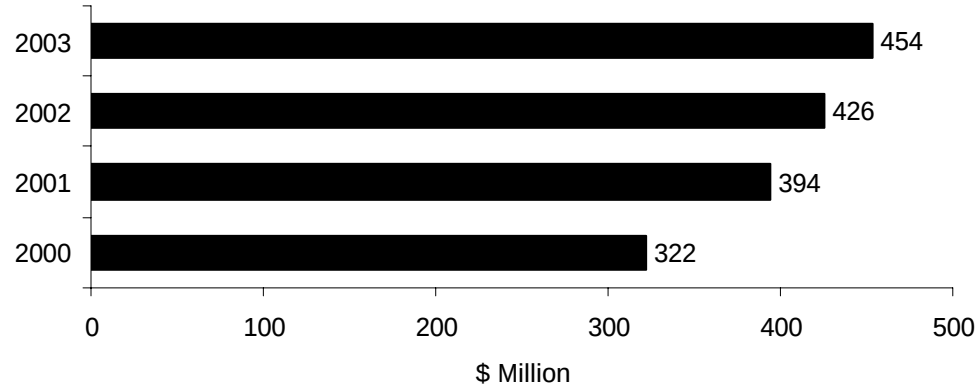
Graph 3.3: Number of patents issued to Australian residents in Australia



Source: IP Australia

Effectiveness Indicator: Industry contribution to research

Graph 3.4: Higher education institutions' research income from industry sources



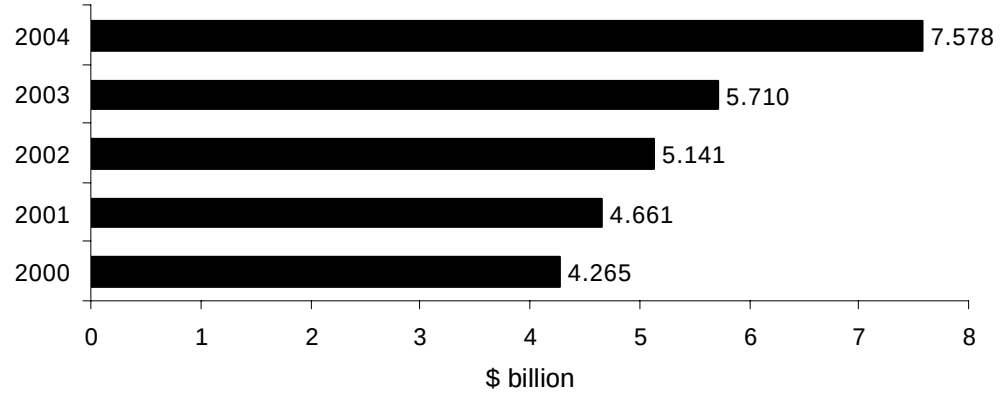
Source: DEST

Supplementary Table 3.1: Industry contribution to research

Performance Measure	2002-03	2003-04	2004-05
Additional funds and value of in-kind contributions obtained from other sources ($million)			
Major national research facilities	10.5	9.1	17.9
Cooperative research facilities	181	236	210

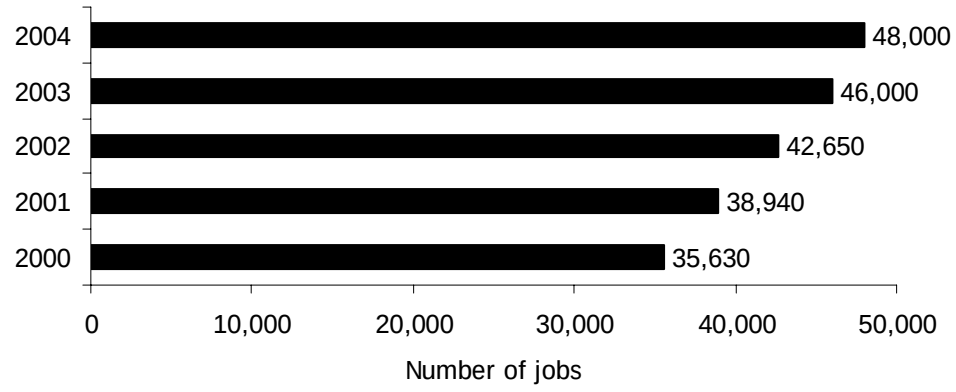
Effectiveness Indicator: National Economic Benefit

Graph 3.5: National income derived from international education and training



Source: DEST

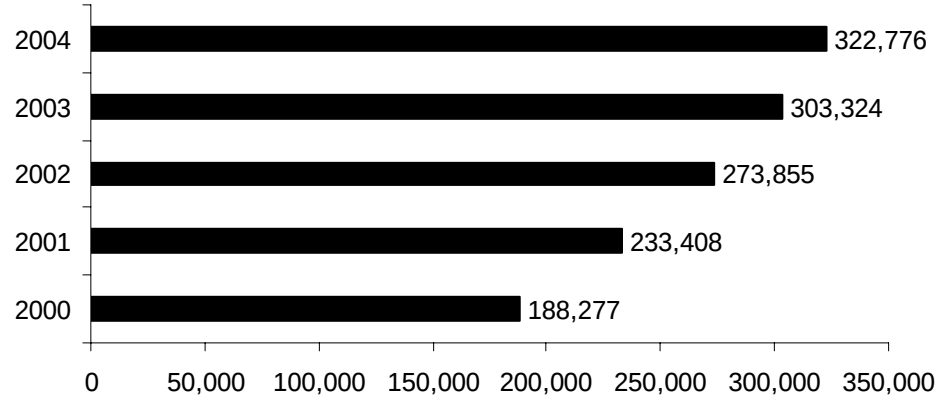
Graph 3.6: Employment associated with education exports



Source: DEST

Graph 3.7: Number of overseas students enrolments in Australia

Source: DEST



Supplementary Table 3.2: Diversification within the overseas higher education market

Performance Measure		2002	2003	2004
Diversification				
Student country of origin	Asia	81.5%	81.0%	78.2%
	Other	18.5%	19.0%	21.8%
Field of Study	Business/IT	61.0%	59.1%	55.6%
	Other	39.0%	40.9%	44.4%
Level of course	Undergraduate	64.1%	66.8%	60.4%
	Postgraduate	35.9%	33.2%	39.6%
Location of supply	Onshore	64.2%	56.7%	Not Available
	Offshore	35.8%	43.3%	

Source: DEST

Table 3.2.3A: Performance in delivery of Administered Outputs

Output Group	Performance Indicator	2004-05 Estimated Actual[2]	2005-06 Estimate[3]
3.1 Research infrastructure			
Quantity	Percentage of ARC and NHMRC grants won by universities*	>75%	>75%
3.2 Assistance for science collaboration and innovation			
Quantity	Number of grant recipients:		
	Cooperative research centres	69	73
	Major National Research Facilities	15	15
	International Science Linkages		
	Number of grant recipients for collaborative research	240	215
	Number of workshops and bilateral meetings	42	28
	Number of showcasing events	8	10
Quality	Establishment of Australian Government radioactive waste management facility	-	Substantial progress in field investigation of sites
3.3 Support for the Australian education and training export industry and international relationships			
Quantity	Number of OS-Help loans, international scholarships, fellowships and exchange opportunities*	470	470
Quality	International Centres of Excellence are seen as world leading in their field	5 Centres reviewed and assessed as making due progress	5 Centres reviewed and assessed as making due progress
3.4 National leadership in engaging people in science and technology			
There are no Administered Outputs in Output Group 3.4			

[2] Where Performance Measure is * indicates Calendar Year 2004
[3] Where Performance Measure is * indicates Calendar Year 2005

Table 3.2.3B: Performance in delivery of Departmental Outputs

Performance Indicator	2005-06 Estimate
Administration	
Accurate and timely approval, payment and acquittal of grants in accordance with legislation and guidelines	At least 90% compliance in relation to Quality Assurance exercises
Progress of bilateral science and technology agreements	Milestones met
Effective management of the International Science Linkages programme	Funds targeted to priority areas
Effective promotion of science awareness provision through the ABC Science Development Project	Satisfactory delivery in accordance with terms and conditions of contract
Implementation of reforms to University Block funds	Milestones met
Improved provision of key infrastructure, particularly information access and bandwidth to increase the accessibility of Australian research	Increased access and utilisation
Facilitating improved access to electronic repositories	Effective project outcomes achieved
Enhanced bilateral relationships and facilitation of growth in overseas education markets.	550 Fee-for Service Contracts valued at $0.8m 240 Market Opportunities issued through AEI market alerts 80% client satisfaction rating 4 joint working group meetings 30 active memoranda of understanding
Legislative framework protects Australia's quality reputation	120 compliance actions
Promotional activity and bilateral engagement conveys relevant messages about Australia's quality	2/3rds of overseas based students hold positive view about quality of Australia's education & training
Impact of 2006 International Education Forum	1000 registrants 100 high level registrants 80% satisfaction rating by participants
AEI websites and publications provide impartial, up-to-date, timely and relevant information	95% of materials on AEU Online up-to-date 80% client satisfaction with AEI information 8 Country Education Profiles updated
Policy Advising	
The Minister will be satisfied with the timeliness and quality of briefs provided by the department	Satisfaction (at least 90%)
Facilitation of Government representation	Successful OECD and APEC meetings
Ministerial and Parliamentary Services	
Parliamentary reports will be provided within timelines set by the Parliament and its Committees and, where this is not possible or resources do not permit, interim response will be supplied within set timelines	Satisfaction (at least 90%)
The Minister will be satisfied with the timeliness and quality of Ministerials provided by the department	Satisfaction (at least 90%)
Prime Minister's satisfaction with the annual Science Prize event	Satisfaction achieved
Prime Minister's and Ministers satisfaction with the timeliness and usefulness of independent and external advice received from the Chief Scientist and PMSEIC	Satisfaction achieved
Research, Analysis and Evaluation	
Research activities are completed according to plan	At least 90%
Research and evaluation reports rated as satisfactory by the Minister	Satisfaction (at least 90%)

Table 3.2.3C: Performance in delivery of Departmental Outputs - Questacon

Performance Indicator	2004-05 Estimated Actual	2005-06 Estimate
Number of Questacon visitors that rate satisfaction as good or very good	>90%	>90%
Questacon visitor and audience reach	>1,200,000	>1,200,000
Reasonable cost per visitor as benchmarked against the international science and technology industry	$13.35	$14.00
Evaluation of Questacon's programmes and activities demonstrating Questacon is making a difference	Evaluations confirm programme efficacy	Evaluations confirm programme efficacy