

# A Top 10 University System for Australia

Professor Margaret Gardner<sup>1</sup>  
RMIT University

## Introduction

Australia has committed to an education revolution as an investment in Australia's future. There are many parts to this investment, from early childhood preparation through schooling to post-secondary education.

Attention to post-secondary education is vital. There has been a decade of reducing government investment per student while many of the higher education systems in our region, such as China and Singapore, have had major increases in investment. There are significant skills shortages at present, in many fields, and demographic projections suggest that without major investment and new strategies those skill shortages will be more acute in the coming decade. And the development of the Australian economy, as with many others, is dependent on access to new knowledge and new technology.

For these reasons attention to post-secondary education is vitally important and within this, setting the policy future for higher education should be a priority.

First the need for skilled graduates, so clear in many fields now, will only increase in the medium term. The recent study of *Industry Demand for Higher Education Graduates in Victoria 2008-2022* projected a shortfall of 49,000 people with higher education qualifications by 2022 (Burke, Cooper and Shah 2007). Given the three to four-year lag in providing these much-needed skills, making the right changes now becomes imperative.

Second, ensuring our population has the general educational preparation to support innovation and adaptability in the face of fast-changing global conditions will not wait for a well-structured, widespread early childhood education initiative to work itself through the educational system to the workforce.

Many educational stories tell us we can make a difference to adults who may have missed out on sound educational foundations by taking them into our universities and vocational education colleges. Post-secondary education is not only relevant for those who enter immediately upon completion of schooling.

From the highly successful education of returned servicemen after the Second World War to the present, it is clear that providing post-secondary education for mature age people is highly effective. Even if mature age entrants have not had a standard or successful schooling experience, a high proportion successfully complete post-school qualifications.

---

<sup>1</sup> With thanks to Robert Webster for the SJT calculations and Trent Gillam

Improved education for the population needs direct attention to those who were denied educational opportunities in the past.

So university and vocational education is a successful and immediate means to increase the number of people with the educational qualifications to ensure Australia a strong place in a world requiring higher levels of educational attainment.

Third, a strong research base is vital not just to the creation of knowledge that may fuel innovation, but for forging links with international currents and innovations. Such a base is an important way that Australia remains part of global knowledge flows and innovations that enhance our economy and society.

Finally, Australia's universities and vocational education institutes have through their international education added substantially to the pool of talented and qualified people to meet Australia's future needs. In higher education alone some 172,000 international students are enrolled in courses in Australia. A significant proportion of these students will add to our skilled migrant intake - of the 42,300 higher education students who completed their course in 2004, 34% stayed in Australia.

So there is an urgent and large policy agenda for post-secondary education to meet these short and medium-term challenges. In this paper I concentrate on higher education and particularly Australian universities, rather than the broader post-secondary education landscape. The current differences in data between the sectors make it difficult to build an overall picture of performance. Moreover my objective here is to raise policy questions for the federal government to consider for higher education in Australia.

## **A Top 10 University System**

As higher education has become more global and more integral to the future of nations, discussion about the relative standing of universities and national higher education systems has emerged and become more intense.

This particular concern about Australia is recycled each time a revised ranking of the *Shanghai Jiao Tong* (SJT) or the *Times Higher Education Supplement* (THES) rankings are released. It has most recently fuelled a commentary about how funding should be distributed to keep a small number of Australian universities in the top 100 of the SJT. This commentary begs the question of why this is the focus for ensuring Australian higher education remains globally competitive.

Will maintaining a small number of universities in the top 100 of the SJT be enough for Australia's future wellbeing? Would such a focus serve Australia's needs?

The debate in Australia about "world-class" universities has focused on the international quality of some universities as measured through these

rankings. This is one way of measuring the quality of particular Australian universities, but it does not tell us much about the overall quality of Australian universities. And apart from the quality of its universities, Australia's development is also dependent on sufficient scale, both in terms of numbers of graduates and in research output to power a developed economy that wishes to remain globally connected.

At present, the two Australian universities in the top 100 of the SJT between them educate around 57,000 students (which means around 12,000 graduates per year), and have about \$400m per year in research income. They are important contributors to education and research but between them provide only around 6% of the total students in the Australian university system.

It is for this reason that the Australian Technology Network (ATN) of universities has argued that Australia should focus on what it takes to produce a top 10 or "world-class" university system, not just a few top 10 universities. The reason for changing the focus from individual universities to the overall system is to ensure that Australia has the scale allied to the quality to meet its future needs. To provide sufficient skills, productivity and innovation means ensuring the right scale and quality.

When the policy focus is turned to what it takes to produce a top university system, Australia must set its overall goals and aspirations. It has to ask questions about how many graduates are needed for the future, about what the nature and intensity of research output should be, and what it takes for Australia to be an integral and respected part of international knowledge and research networks.

There is also another significant reason for focusing on the system and this is the relatively small size of the Australian population. Australia must ensure its graduates and its research are connected to growing global education and research networks, and as a small nation its ability to do so requires some reasonable coverage of key fields in order to do so.

Concentration on high quality in a small proportion of a university system may be a successful strategy in a large system. For example, China is investing in its top 100 universities to bring them to world class standard. Australia doesn't have 100 universities. In a small system, a strategy based on a small percentage at high quality and a long tail of under-achievement is not likely to produce sufficient numbers of quality graduates or research for Australia to be a significant part of higher education and research networks.

So Australia must ask itself what it takes to produce a top ten university system. What are the objectives or goals, how are they measured and how will we know we have achieved them?

I want to suggest some simple and broad objectives. Australia is trying to achieve high quality graduates who will supply the abilities and skills the

nation needs for its social and economic future, and internationally connected research that will foster innovation and a better future.

In meeting the education and research objectives outlined above, two questions are paramount. First are there sufficient graduates, and are these graduates representative of our society<sup>2</sup> and is there sufficient research for our needs? This is an objective about scale. And second are these graduates and research of the quality required to provide for the societal and economic outcomes we desire? This is an objective about quality.

Beyond these two I suggest that Australia, on the basis of past performance and its future, should consider a third objective or goal and that is to be a successful international educator. In other words, Australia should aspire to provide post-secondary education to students from across the world. It should do so not only for economic ends, but to build a network of strong links with people across the region that ensure a diverse and globally connected economy and society.

### **Scale**

Turning first to scale, we need sufficient graduates to provide the intellectual and technical input to drive a sophisticated economy. One way of measuring this is to look at whether we are ensuring this supply. Here the OECD data suggests that Australia is placed 8<sup>th</sup> in the OECD in terms of proportion of graduates in the population (see Table 1). The current proportion is less than some other high skill developed economies, and this is something Australia should consider in setting its goals.

A relevant further question is whether we are improving or declining in terms of this proportion of graduates. Evidence suggests that the proportion of graduates in the population is increasing. In 2005, 29% of Australian 25-34 year olds had a degree, compared to 23% of 35- 44 year olds and 16% of 55-64 year olds (OECD 2007: 38). The policy question is what proportion of graduates Australia believes is needed?

Second, Australia needs research and development to fuel innovation and other improvements. Here the OECD provides measures of expenditure per capita or as a percentage of GDP on which we can make international comparisons. Australia is not in the top 10. To put Australia into the top ten would require significant increases in research expenditure. It is also important to note that most of the nations in the top ten for GERD in Table 1 have a significant percentage of their research expenditure, well in excess of 55%, derived from industry rather than government.

---

<sup>2</sup> In this paper I do not address in detail the access and equity objectives that should be set for a top ten university system. Australia should expect that indigenous Australians, people with disabilities, people from non-English speaking backgrounds and those of low socio-economic backgrounds are represented in higher education graduates, for example, in proportion to their representation in the population. How well Australia compares to other nations is not readily available. This topic requires a separate paper.

**Table 1: Scale of Australian higher education (proportion of graduates and expenditure on research)**

	Percentage of graduates in 25-64 yr old (2004)		Gross domestic expenditure on R & D (GERD) % GDP (2005)		GERD Per capita (2005)
United States	29.7	Sweden	3.89	Sweden	1250
Norway	29.5	Finland	3.48	United States	1094
Netherlands	27.2	Japan	3.33	Luxembourg	1094
Denmark	25.3	Korea	2.99	Finland	1077
Iceland	24.5	Switzerland	2.93	Japan	1023
Canada	22.2	Iceland	2.81	Iceland	1017
Korea	22.0	United States	2.62	Denmark	834
<b>Australia (8<sup>th</sup>)</b>	<b>21.9</b>	Germany	2.46	Austria	831
Japan	21.5	Denmark	2.45	Germany	758
Russian Federation	20.8	Austria	2.42	Norway	735
United Kingdom	20.3	<b>Australia (15<sup>th</sup>)</b>	<b>1.76</b>	<b>Australia (16<sup>th</sup>)</b>	<b>574</b>
<i>OECD average</i>	<i>17.9</i>	<i>OECD weighted mean</i>	<i>2.25</i>	<i>OECD weighted mean</i>	<i>659</i>

Source: OECD (2007a)

Together these measures give a sense of the current scale (or comparative intensity) of the Australian higher education system and go some way to answering the question of whether we can provide the graduates and research needed for the future.

They show that the Australian system is in the top ten in terms of the proportion of graduates in the 25-64 year old population. However, Burke and Shah (2006) estimate that it is likely that there will be a need for some 30% of the working population to be graduates by 2016. Such a goal would require increased numbers of Australian students graduating in the next five years or so. To increase the proportion of the population is not as straightforward as increasing places, it will require improving the access of disadvantaged groups and retraining of those in the workforce.

The data in Table 1 does not answer the question about the particular professions or occupations covered by those graduates, nor the composition in terms of advantaged and disadvantaged groups and nor

does it tell us whether Australia's research is in the 'right' fields for the future.

Much of our recent higher education policy has been directed to these compositional questions, to ensuring that shifts occur through moving higher education places or research priorities. The answer to these issues is to be found in whether our higher education system is responsive, that is, whether it shifts its education and research to respond to future demands. To the extent that we have evidence it appears that Australian higher education is reasonably flexible and responsive and probably needs less intervention in these ways than is often thought necessary.

### **Quality**

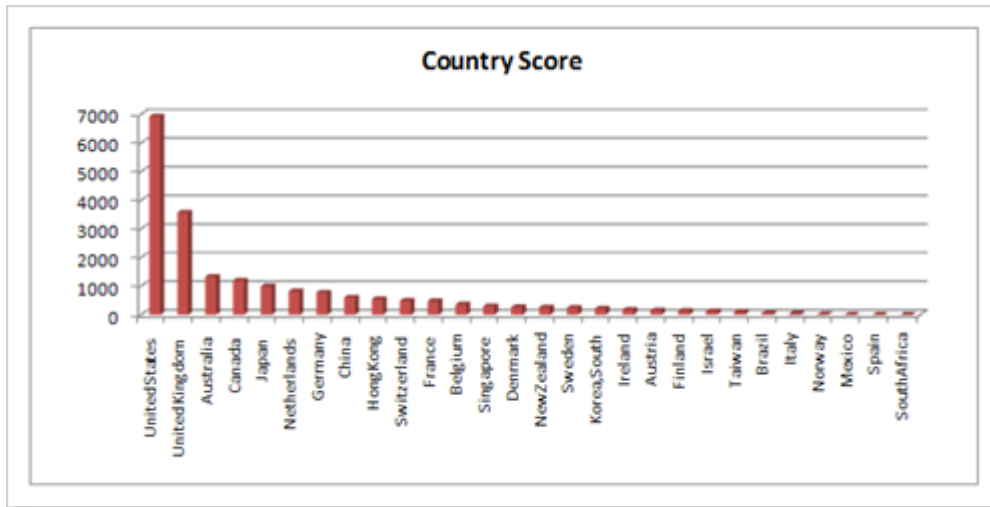
Commentary about the quality of Australia's higher education system has been strongly influenced by international rankings, since these benchmarks have been used as a surrogate measure for quality. The two that have been dominant in general commentary are the *Shanghai Jiao Tong* (SJT) which is focused exclusively on research quality, and the *Times Higher Education Supplement* (THES) rankings which covers a broader set of indicators. Neither ranking system captures all the elements that are critical to quality, particularly since there are no established international benchmarks for learning and teaching quality. This latter omission is a serious flaw of international ranking systems since education is a major function of universities.

Australia has 17 of its 38 public universities in the top 500 of the SJT and 7 in the top 200. In the THES, Australia has 12 public universities in the top 200. The United States universities dominate both rankings in terms of the number of universities ranked in the top 200, and in the THES the top two countries in terms of number of ranked universities are the US and the UK.

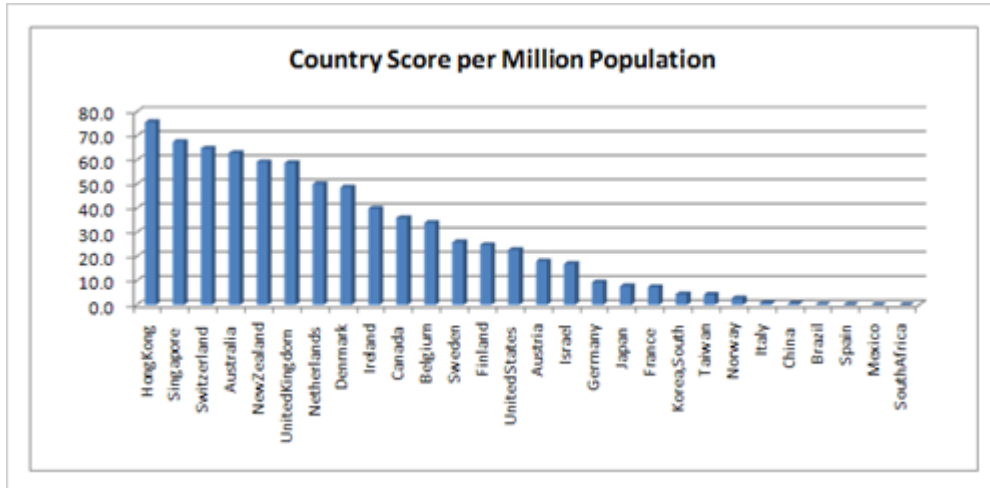
These results are to be expected given the larger size of both countries. In order to get an estimate that takes into account the varying size of the university systems, account needs to be taken of the size of the country, in terms of its GDP and population. Eric Beerkens (2007) has recalibrated the THES rankings controlling for population and GDP. These calculations show Australia's performance to be fourth on both measures, sharing this top four ranking with Hong Kong, Singapore, Switzerland and New Zealand.

**Table 2A, B and C: THES Ranking by country, per million population and per million GDP**

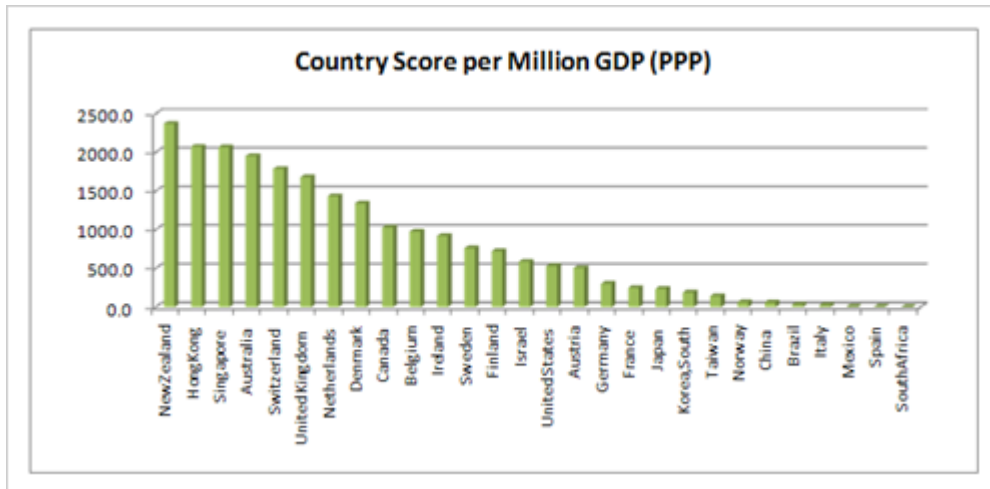
**2A**



**2B**



**2C**



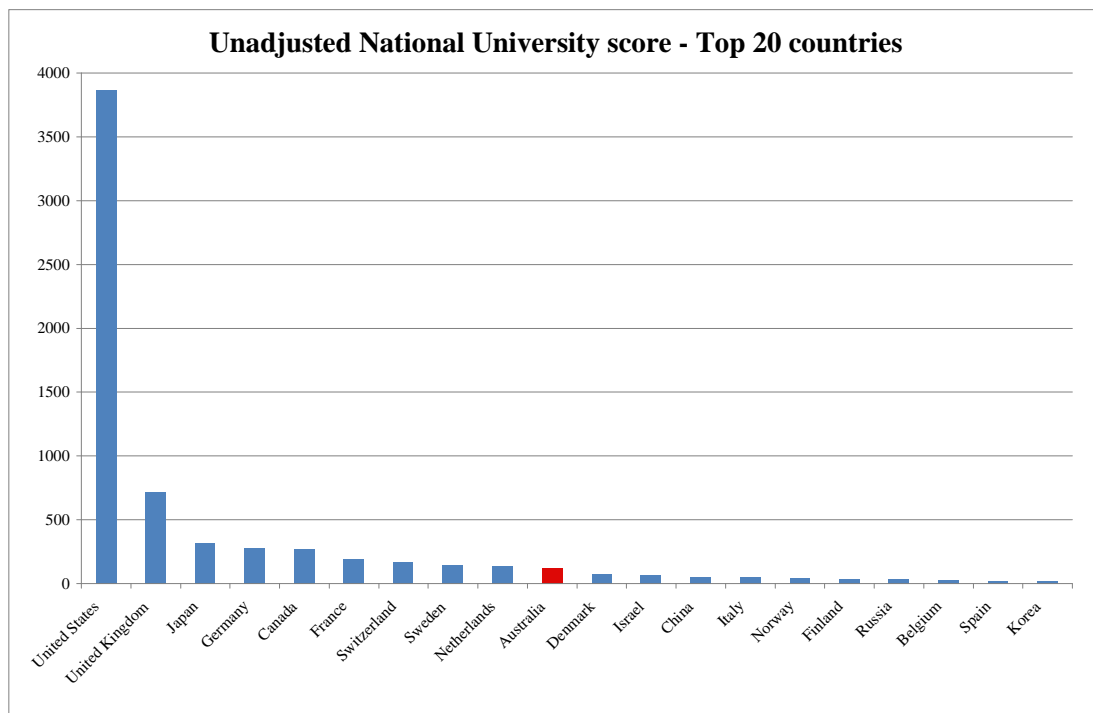
Source: Beerkens (2007)

The graphs above show that in the THES rankings there is an argument that Australia is in the top ten nations when considered as a nation and adjusted for population and GDP.

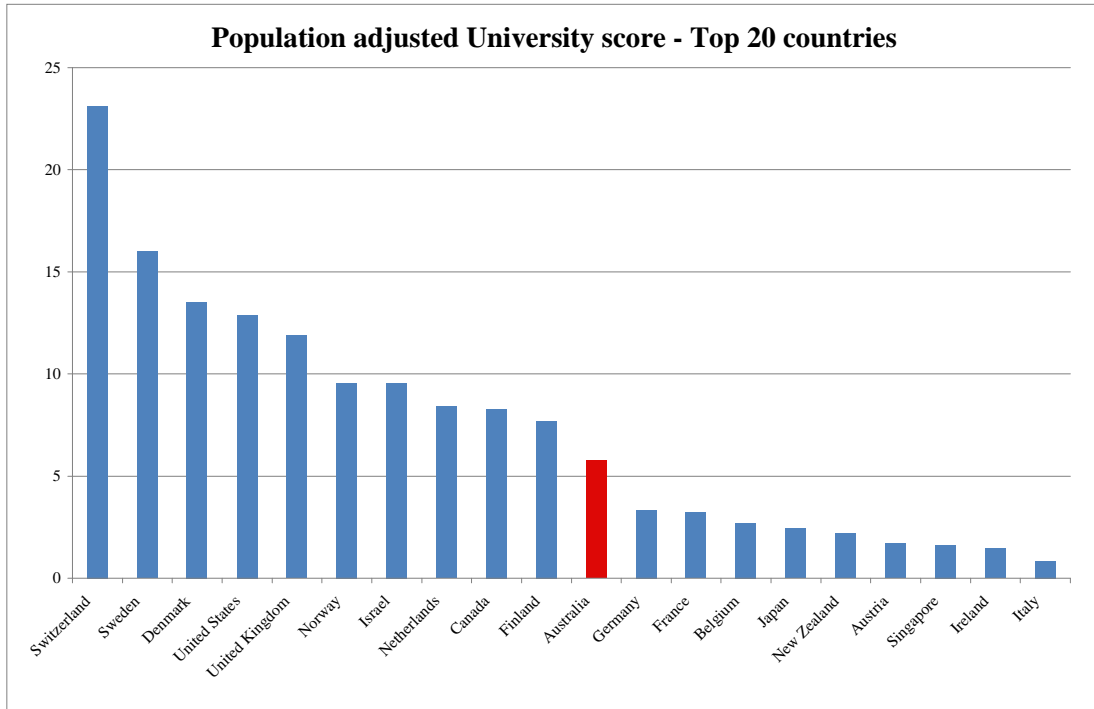
Turning to a similar calculation for the SJT, we find that Australia is 11<sup>th</sup> when the adjustments are made. In the case of the SJT, which focuses on measures of research quality, Australia is behind a number of small countries such as Israel, Finland, Norway and Denmark.

**Table 3A, B and C: SJT Ranking by country, per million population and per million GDP (top 20 countries)**

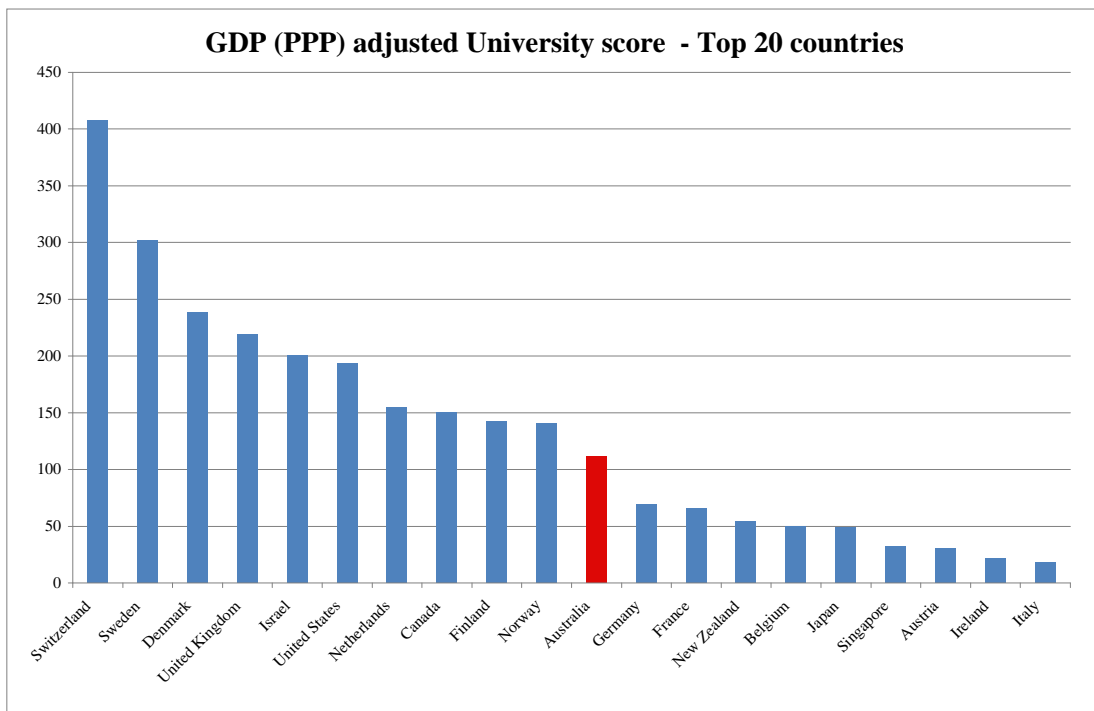
**3A**



### 3B



### 3C



The good news from this examination of international rankings is that Australia is in the top 10 or top 20 of countries in terms of the number of universities ranked. Leaving aside debates about the soundness of the methodology of these rankings, this suggests that there are a number of Australian universities that are seen by peers or on some objective indicators to be high quality.

This might lead to some complacency about the quality of Australia's university system, since clearly a number of universities rank well enough to put Australia in a comparatively high position. However, a brief inspection suggests there is room for improvement as a number of small nations have a stronger position in these rankings than Australia. Australia needs to be concerned about the absolute rank of its highest performing universities, as well as the proportion of its university system that is well-placed.

None of the graphs above show whether the quality of Australian higher education is improving or declining. Australian universities have not been improving noticeably in these rankings over the last few years, however. And there are many small countries that outperform Australia in both rankings.

The rankings are made up of various aspects of performance and peer estimation. However where they can be influenced they are affected by investment in research or education as shown in for example student: staff ratios.

### **International education**

The final aspect of performance of Australian higher education performance is performance in international education. Australia has been a leading nation in terms of building international education, onshore and offshore. It has been so successful that education is Australia's third or fourth largest export. And these export estimates do not include offshore education, only onshore students.

As with all exports, success is a combination of price<sup>3</sup> and quality. However it is noteworthy that Australia with 0.3% of the world's population has 6% of the international students<sup>4</sup> (OECD 2007:304). Australia has a higher education system that attracts students from across the world. Clearly this has been built on the strength of the domestic system, but it is now of a scale that contributes to the overall development and quality of higher education in Australia and its outcomes.

International students made up 22% of total onshore Australian graduates from first degrees, some 53% of Australian second-degree graduates and around 19% of the higher degree research graduates from Australia in 2005 (OECD 2007:325).

Compared to the OECD, Australia has the highest proportion (17.3%) (see Table 4) of international students in higher education. This proportion well exceeds the OECD average of 6.7%. However, the proportion of international students in advanced research programs at 17.8% is behind

---

<sup>3</sup> On recent OECD data Australia has the second highest average tuition fees for international students after the United States (OECD 2007:308)

<sup>4</sup> It should be noted that Australia's share of international students has remained stable at 6% between 2000 and 2005.

five other OECD nations and only just above the OECD average, suggesting there is room for improvement to ensure that international research education is as strong as Australia's other performance.

**Table 4 Foreign students in tertiary education (2000, 2005)**

	<b>International students as a percentage of all tertiary enrolments</b>		
	Total tertiary	Tertiary Type A (degree programs)	Advanced research programs
<b>Australia</b>	<b>17.3</b>	<b>19.3</b>	<b>17.8</b>
New Zealand	17.0	16.8	16.6
United Kingdom	13.9	15.1	40.0
Switzerland	13.2	13.1	43.3
Austria	11.0	12.1	15.4
France	10.8	11.7	34.4
Ireland	6.9		
Belgium	6.5	7.7	19.9
Netherlands	4.7	4.7	
Sweden	4.4	4.8	
Denmark	4.4	4.6	6.9
Finland	3.6	3.3	7.3
United States	3.4	3.2	24.1
<i>OECD average</i>	<i>6.7</i>	<i>7.2</i>	<i>16.5</i>

Source: OECD 2007

International education is a key part of the Australian economy, not merely because of its contributions to skilled graduates and research, but through direct contribution to the demand for goods and services. In determining what constitutes a top ten university system, Australia should think boldly about its aspirations in this area where it currently has a comparative advantage.

It is now one of the dominant providers of international education; do we wish to maintain this position? And what will it take to do so? To commit to this goal requires an overall strategy for Australian higher education, as well as consideration of the support that might be needed to build international research education.

## **Conclusion**

The evidence presented about the scale and quality of Australia's higher education system shows that, as a system, performance has been strong in many areas, but it also reveals areas that need immediate attention. It shows a system that is expanding the number of graduates in the population. And it shows a system that is achieving well beyond its size in terms of bringing international students to Australia who will add to

overall capacity and global links in future. In both these areas Australia is currently in the top ten.

However, there is work to be done in addressing access for those from disadvantaged groups and those already in the workforce, as well as continuing the expansion of the overall proportion of the population who can support future skills needs.

The significant proportion of international graduates (over 20%) in Australian higher education is assisting this increase by migration. Indeed migrants with Australian qualifications are now well over 40% of those entering Australia. Projections indicate that this proportion needs to increase to meet future needs, as do the number in advanced research programs.

While Australian international education is a major success story, there are two areas to consider. The first is the relatively static share of the international student market over the last five years and what this means for the future as competition increases in the region and beyond. The second is the proportion of international students in advanced research programs. An increase in this proportion is something that will be important to increasing research output and capacity for the future.

In terms of gross domestic expenditure on research and development Australia is not in the top ten and has a lower proportion of industry investment in GERD than many of the nations who perform well on this measure. This is an area for immediate attention, since many of the small nations who perform well on this measure also have high performance on international rankings of quality.

When we look at the international rankings, Australia, despite its small size, rates in or close to the top ten. However we know that the overall rankings of Australian universities in the SJT and the THES have slipped in the last few years. Given these drops and the lagging nature of the data being used in these rankings, it is likely that Australia is poised to fall. The reasons for the drops in performance need further investigation, but we know that high student: staff ratios are problematic in the THES for Australian universities and that there are threats to Australia's research performance.

And so here are some suggestions for goals for Australian higher education drawn from this analysis. Australia should set itself a small number of goals that will ensure that it has a top ten university system in the next five years. This should be a top ten system in terms of scale or intensity sufficient for Australia's graduate and research needs, of a quality to ensure it remains part of international education and research networks, and of provision of international education that draws students from across the world to our universities.

Some proposed targets to achieve these goals might be:

- 33% of our adult population with a higher education qualification (and within this we should set a sub-target for research higher degree graduates)
- 25% of our higher education students should be international and should also be reflected in the proportion of international students in research programs
- gross domestic expenditure on research and development of 2.5%, including an aspiration to increase the proportion of research expenditure from industry
- Australia should aim to be in the top ten in the SJT and the THES in terms of the number of universities in the top 200

As indicated earlier Australia should also set targets for participation and success for disadvantaged groups in its population so that their participation is increased to be more in proportion to their representation in the population.

Each of these targets and the goals that they support require more investigation to determine their implications for policy and budget. They require thought about implementation, although the aim should be to set broad goals, not many small quotas and processes to achieve these broad ends.

It is tempting to turn aside from the implications of identifying benchmarks for proportions of graduates in the population, or level of research expenditure, or the scale of international education because we worry that what is needed to bridge the gap is too much to gain or for government or universities to digest.

There is no reason to expect that bold policy objectives can be achieved tomorrow. If they were they were probably not worth mentioning. And yet many of the targets outlined above for the Australian university system are not far beyond reach. They are achievable, but they need to provide a focus for policy if they are to be achieved.

Australia is a nation that has achieved much, but the challenges before it suggest that it needs to have clear goals and aspirations for what its universities can provide for the future. Much can be done if Australia is prepared to commit to building and maintaining a top ten university system.

## References

OECD (2007) *Education at a Glance: OECD Indicators*, Paris.

OECD (2007a) *OECD in Figures*, Paris.

Beerkens, E (2007) *THES Ranking 2007 by Country*, Beerkens Blog, <http://blog.beerkens.info/index.php/2007>.

Burke, G. and C. Shah (2006) *Qualifications And The Future Labour Market In Australia*, Report prepared for the National Training Reform Taskforce.

Burke, G., L. Cooper and C. Shah (2007) *Industry Demand for Higher Education Graduates in Victoria 2000-2022*, Report prepared for the Office of Training and Tertiary Education.