

Australian Academy of Science

Draft National Strategy for International Education questionnaire

Please outline your (or your organisation's) interest in Australian international education. Add any other relevant content.

Response:

The Australian Academy of Science champions, celebrates and supports excellence in Australian science, promotes international scientific engagement, builds public awareness and understanding of science and provides independent, authoritative and influential advice. The Academy comprises over 500 of Australia's leading scientists, each elected for their personal contribution to science.

The Academy welcomes the opportunity to comment on the draft international education strategy. The Academy is pleased to see the draft strategy draw strong links between the future success of international education in Australia and the strength of the broader science, research and innovation system.

The Academy's interests in Australian international education as set out in the draft strategy include the Academy's:

- long history in managing international science programmes, and developing international links between science Academies
- development of innovative science education programmes for primary and secondary schools
- commitment to scientific excellence in Australia
- support for early- and mid-career researchers, including international students

The Academy seeks to make comment in a few specific areas where the final plan might be improved further. The relevant sections on which the Academy is commenting are highlighted in blue, and the Academy's comments are highlighted in orange.

Summary of recommendations

The Academy recommends that the Strategy:

- **include reference to the Department of Education and Training funded Academy school science education programmes, *Primary Connections* and *Science by Doing*.**
- **be updated to reflect the Government's recent commitment to continue the CRC programme.**
- **acknowledge the need for a stable funding environment.**
- **recognise the importance of fellowship programs at all career stages.**

- acknowledge the Research Infrastructure Review and the work underway to find a long-term funding solution for Australia's major national research infrastructure needs.
- align the incentives proposed in the boosting the commercial returns from research agenda with the measures of success proposed in this strategy
- be updated to reflect the commissioning of ACOLA to undertake a review of Australia's research training system, and commitment given to ensuring that Australia's research training models are comparable with the best in the world.
- recognise the competitive nature of international engagement along with the need for targeted actions to ensure Australia remains a collaboration partner of choice.
- acknowledge the importance of an overarching strategic approach to Australia's international engagement.
- include a strategic action to develop and track Australia's progress against a range of benchmark indicators.

Does the vision statement in the draft strategy represent Australia's aspirations for international education?

Vision statement - "Australian international education is a core element of Australia's economic prosperity, social advancement and international standing."

Response:

Rather than international education being seen as a 'core element', it might be better seen as a 'driver' of economic prosperity, social advancement and international standing.

Are any significant goals for international education not adequately covered?

Stated goals:

1. Creating a world-class education system
2. Building on strong and emerging international partnerships
3. Fostering an international outlook
4. Attracting international talent
5. Ensuring a positive and rewarding student experience

Response:

Goal number two should be adjusted to make reference to developing new partnerships in addition to building on strong and emerging international partnerships

Can you identify the strategic actions which best support your goals for international education?

Response:

The Academy offers the following comments on proposed strategic actions

Goal 1 – Creating a world class- education system: To be globally competitive, Australia will continue to work to create an education system that stands out as the best in the world, with some of our institutions ranked among the very best

Strategic action 1.1 – Embracing the freedom to achieve excellence

- *promote improved standards and curriculum design in maths and science.*

The Academy supports the strategy's call to improve standards and curriculum design in maths and science education. With support from the Australian Government the Academy has undertaken a range of activities that will assist in raising maths and science standards in the coming years.

To support the effective teaching of science the Academy has developed two award-winning science education programmes, *Primary Connections* for primary schools, and *Science by Doing* for secondary schools. The use of these programs is now widespread within schools, and in addition to developing teaching and learning materials these programmes offer professional learning activities for teachers. Using the expertise that resides within these programmes the Academy has supported educational initiatives in the South East Asian region that have been funded by the Australian Government.

The Academy recently undertook a review of background papers on current pedagogical approaches to the teaching of mathematics and their appropriateness in a knowledge economy; the availability of curriculum resources currently supporting the Australian Curriculum: Mathematics; the gaps in availability of quality curriculum resources; and some sense of priority for filling these gaps for the Department of Education and Training.

The Academy looks forward to continuing to work with the Department of Education and Training in the coming years to develop these programs further, to embed them within the Australian Government's strategy and to improve standards and curriculum design in maths and science.

The Academy recommends the strategy include reference to the Department of Education and Training funded Academy science education programmes, Primary Connections and Science by Doing.

Strategic action 1.2 – Investing in world-class research and research infrastructure

- *The Australian Government encourages Australian institutions and industry to make strategic investments in world-class research and research infrastructure and foster collaboration between researchers and industry in research and development*

Recognition of the CRC Programme

Since the release of the Draft Strategy the Government has released the final report of the review of the Cooperative Research Centres (CRC) programme, and it has accepted all of the review recommendations. The continuation of this programme is welcome and it will play an important role in boosting collaboration between researchers and industry. CRCs support a number of postgraduate education opportunities for both domestic and international research students. The CRCs also aid in the development of international science and industry collaboration.

The Academy recommends the strategy be updated to reflect the Government's recent commitment to continue the CRC programme.

- *The Australian Government will provide base research funding and competitive research grants to universities, research fellowships for mid-career researchers, and targeted support for research in key priority areas*

Base research funding

The acknowledgement within the strategy that Australia needs strong-levels of research investment and investment in research infrastructure is welcome.

In recent years there have been significant changes made to future projected levels of base research funding for universities and other science agencies. The maximum value from research investment is realised when investment levels are predictable. Sudden changes in funding levels can be highly disruptive. They give rise to inefficiencies and damage sector confidence.

The Academy recommends the strategy acknowledge the need for a stable funding environment.

Research fellowships

The commitment within the document for the Government to continue support for research fellowships for mid-career researchers is welcome. Since the document was released the Minister for Education and Training confirmed the Government would fund 50 ARC Future Fellowships in 2015. It is hoped that the programme will be an ongoing programme and as funding allows will increase in size.

It would be preferable if the strategy also acknowledged the importance of the Government's continuing commitment to support fellowships and award programs for other career stages. This would include ARC Discovery Early Career Researcher Awards, ARC Laureate Fellows, and the NHMRC Fellowship program. These programs are already ongoing programs, delivering substantial benefits to the Australian research system.

The Academy recommends the importance of fellowship programs at all career stages be acknowledged within the strategy.

- *The Australian Government will establish a Medical Research Future Fund, with net earnings to provide a permanent revenue stream, primarily to the National Health and Medical Research Council*

The Academy welcomes this ongoing commitment and looks forward to the fund's establishment. The recently released legislation recognises the expertise and importance of ensuring a central role for the National Health and Medical Research Council in managing the funding of health and medical research from the fund's disbursements

- *The Australian Government will invest in the National Collaborative Research Infrastructure Strategy*

Research infrastructure funding

The commitment to invest in the National Collaborative Research Infrastructure Strategy (NCRIS) will ensure Australia has the world-class research facilities needed to undertake world-class research and the skilled people needed to operate them, while minimising wasteful duplication. This infrastructure is essential to Australia's future standing as a leading science and research nation, and ensuring its universities and research organisations remain among the best in the world. Access to such infrastructure is also vital in terms of developing international science collaboration opportunities, an area the strategy document acknowledges as important to the future strength of Australia's research efforts.

In recent years funding for research infrastructure has lurched from year to year with a series of *ad hoc* funding arrangements, under spectre of potential closure. The Government is undertaking a review of research infrastructure and this is expected to report within the next few months. It is expected that this review will make recommendations about potential long-term funding models for NCRIS.

The Academy recommends the strategy acknowledge the Research Infrastructure Review and the work underway to find a long-term funding solution for Australia's major national research infrastructure needs.

- *The Australian Government will work with industry and researchers on a plan to focus the Government's investment in research, including through the Commonwealth Science Council, sharpening incentives for collaboration between research and industry, ensuring research training adequately prepares researchers, and supporting world-class research infrastructure.*

Sharpening incentives for collaboration between research and industry

There is scope to improve on Australia's relatively low-levels of collaboration between research and industry. The commitment by the Government to make improvements in this area is welcome, and should form part of this strategy. Such collaboration will not only improve and deliver direct economic benefits but has the potential to improve the attractiveness of Australia as a research and education destination. The Government's recent commitment to the CRC programme (as outlined above) is welcome and will play an important role. Since the release of the draft strategy the Government has released its agenda for action as part of its boosting the commercial returns from research agenda. The incentives proposed as part of this agenda should align with the measures of success proposed in this strategy.

The Academy recommends that the incentives proposed in the boosting the commercial returns from research agenda and the measures of success proposed in this strategy should be aligned

Ensuring research training adequately prepares researchers

Since the release of the discussion paper the Minister for Education and Training has commissioned the Australian Council of Learned Academies (ACOLA) to undertake a review of Australia's research training system. The Minister stated that Australia's research training system will fall behind if our research training models are not comparable with the best in the world.

The Academy recommends the strategy be updated to reflect the commissioning of ACOLA to undertake a review of Australia's research training system, and commitment given to ensuring that Australia's research training models are comparable with the best in the world.

Goal 2 – Australia will build on our strong education and research partnerships to broaden engagement in international education

Strategic action 2.2 – Investing in high-quality international research collaborations

- *The Australian Government recognises the roles that Australia's learned academies and peak university bodies play in building strong link with global counterparts across all research disciplines to improve access for Australian researchers and students to global research funding programmes and infrastructure.*
- *The Australian Government will maintain science-focused diplomatic relationships and support research dialogues and bilateral research collaborations with key partner governments to help research networks make connections in areas of national priority.*
- *The Australian Government will make strategic investments in high-quality, globally connected research, including through the Australia-India Strategic research Fund (AISRF) and the Australia-China Science and Research Fund (ACSRF)*

Competitive nature of international collaboration

The Academy commends the strategy's aim to encourage high-quality international research collaboration. The strategy makes the case for international science collaboration, and the benefits this will bring for international education. The current programmes undertaken by the Government and by Australia's learned academies and peak bodies are appropriately recognised within the strategy. Each plays an important part in enhancing Australia's capacity to engage in international collaborations.

It would be appropriate for the strategy to acknowledge the competitive nature of international collaboration. A growing proportion of global scientific research is taking place in Asia, and this will continue to grow as countries such as China, India, Japan, South Korea and others reap the benefits from their considerable (far greater than Australia) investment in science. These countries already have world-class research infrastructure and capabilities, and access to such facilities provides enormous opportunities and benefits for Australia, opportunities that we are not able to realise on our own. However we have to compete with other nations to take advantage of such collaboration opportunities, and actions need to be taken to ensure that Australia is a partner of choice.

The Academy recommends the competitive nature of international engagement be recognised within the strategy, along with the need for targeted actions to ensure Australia remains a collaboration partner of choice.

Strategic approach to international engagement

Australia is well placed to strengthen its international links, especially with Asia, but there is a closing window of opportunity to do so. While Australia and foreign research funding agencies are, to varying extents, able to support internationally collaborative research on a competitive basis, scope to explore and develop collaborative relationships is needed if Australian researchers are to

compete in the collaborative stakes. Beyond China and India there are no formal international science collaboration programs of scale. Successful international collaboration programs such as International Scientific Linkages which were put in place by the Howard government were allowed to lapse in 2011, leaving Australia without a formal mechanism for engaging with scientists throughout the world.

This makes it difficult for Australia to take advantage of substantial collaboration opportunities elsewhere. The Academy notes that the Government is considering its approach to international engagement in STEM in its forthcoming science strategy and hopes that it uses this opportunity to develop an overarching international science strategy.

The Academy recommends the strategy acknowledge the importance of an overarching strategic approach to Australia's international engagement

What are the best measures of success for international education?

Proposed measures of success within the strategy

- *Improved education and research performance against credible international benchmarks.*
- *Strong levels of investment in research and research infrastructure.*
- *More collaboration between private firms and universities in research and development.*
- *Greater and more informed student choice.*
- *Reduced red tape, which benefits education and training institutions by allowing them to do what they do best—teach students and conduct research.*
- *More high-quality joint research relationships and publications.*
- *More partnerships in emerging regions and markets, such as Latin America, the Middle East and Africa.*
- *Increased support for student and researcher mobility.*
- *More Australian students studying abroad.*
- *More Australian students studying a language in addition to English.*
- *More of the world's students and researchers undertaking study and research in Australia.*
- *More of the world's students and researchers applying for Australian scholarships.*
- *Active alumni networks are established that create diplomatic, trade, business, research and social connections between Australia and our global partners.*
- *Alumni are engaged in meaningful activity that establishes enduring connections with Australia and each other.*
- *Higher levels of satisfaction with education experiences and outcomes.*
- *More instances of eligible international students getting employment experiences after graduation.*
- *Higher levels of satisfaction with the cost of a range of services.*
- *An increased percentage of purpose-built accommodation for students relative to non-purpose-built accommodation.*
- *Higher levels of satisfaction in the English language competency of international student graduates reported by employers.*
- *Higher levels of satisfaction among international students in relation to the opportunities to interact with Australian students and communities.*
- *Increased numbers of international students enrolling with Australian providers overseas.*
- *Greater take-up of Australian qualifications provided through distance education and online.*
- *More country TVET quality frameworks in the Asia-Pacific region use Australia's VET quality frameworks as a reference point.*

Developing key performance indicators

The proposed measures of success within the document appear to be high level goals and do not include detailed key performance indicators. While each of the proposed measures is reasonable and in line with the strategy's goal to ensure Australia remains a world leader in international education and research, they will be difficult to achieve without specific targets. There are a range of quantifiable measures and international rankings that could be used to track Australia's progress, including: world university rankings, reputational survey rankings, student evaluations, citation analysis and so on. Without setting specific measures there is a risk that Australia will not aim high enough, and will not know if it is on target to achieve success.

It might be beyond the scope of this strategy to define these specific targets at this stage. Some targets would need to be developed within the context of the Australian Government's work on the development of a national science strategy, and the boosting the commercial returns from research agenda.

The Academy recommends that a strategic action arising from this strategy should be to develop and track Australia's progress against a range of benchmark indicators

What are some case studies that best illustrate Australia's success? Please provide examples.

The Academy has previously produced two reports containing case studies that show the benefits of international science engagement, and a copy of each of these reports is enclosed. While these reports are from 2010 and 2011 respectively the case study examples could be updated for this draft strategy.

The Academy manages a range of high level international science meetings and collaboration opportunities (many aimed at early-to-mid career researchers), and could provide further details for use as a case study.

The Academy could provide further details on its science education programs, *Primary Connections* and *Science by Doing*, for use as a case study.

What would you like to see progressed as a priority for the strategy in the first year?

Response:

- The development of an overarching international science and research collaboration strategy
- A long-term funding solution for NCRIS
- A stable research funding environment for science, research, innovation and higher education

Is there anything else you would like to raise that will help develop the final National Strategy for International Education?

Response: