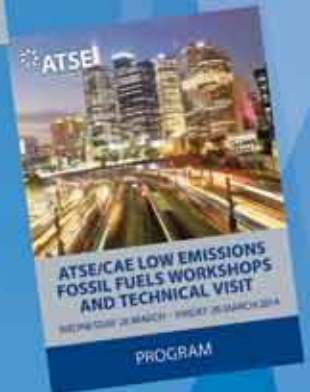




ATSE ANNUAL REVIEW



**INCORPORATING
ABRIDGED AUDITED
ACCOUNTS 2013-14**

CONTENTS

President's Review	1
CEO's Review	2
National Challenges	3
Major Events	12
Women in TSE	17
The Crawford Fund	18
The Fellowship	20
Key People	23
Our Board	24
Financial Summary	28
Abridged Audited Accounts	29

Australian Academy of Technological
Sciences and Engineering (ATSE)

Annual Review 2014

The full Audited Accounts of the Academy for 2013-14 can be viewed on the ATSE website (www.atse.org.au) and printed copies are available from the ATSE office (03) 9864 0900 or by email (lynn.pagoda@atse.org.au).

The full Audited Accounts will be presented to the Annual General Meeting of the Academy on 28 November 2014 at the Langham Hotel, 1 Southgate Avenue, Southbank, Melbourne.

This Annual Review contains Abridged Audited Accounts for 2013-14.

PRESIDENT'S REVIEW

ADVOCATING FOR NATIONAL PRODUCTIVITY AND PROSPERITY THROUGH TECHNOLOGICAL INNOVATION



ATSE is a strong advocate for the role of technological innovation in improving our national prosperity. Progress in technological innovation contributes strongly to growth in national GDP and can stimulate new international markets. Australia must focus on education, science, technology, engineering and innovation to develop its prosperity and sustainability.

And we must improve our efforts to link research to commercial outcomes and productivity gains – currently, we sit near the bottom of OECD innovation tables – to boost innovation and commercialisation outcomes.

ATSE is empowered in its mission by its 800 Fellows drawn from across industry, universities, research institutes and government, representing excellence and achievement in the technological sciences and engineering.

The capability and commitment of the Fellows, backed by the energy and skills of our professionals in the ATSE office, mean we have the firepower to make a difference.

I'm delighted to report that, in the second year of our current Strategy Plan, we made some good progress in our mission to influence public debate and policy development to ensure technological innovation can play its proper role in Australia's future.

Our achievements against our seven National Technology Challenges are detailed in this Annual Review but included an array of Position Statements and Action Statements on our key topics and an almost-weekly menu of workshops, symposia, conferences, seminars, workshops and briefings for our stakeholders in government, industry and the research world, as well as our Fellows.

We also made nearly 20 submissions to various governments and agencies, published a variety of important topic reports and promoted technological advancement through a program of more than 20 lectures and presentations across the country on technology topics.

Some of the highlights are worth noting:

- The Academy continued its efforts to reignite debate on Australia's energy options – and did it with substantial success with its two-day conference in Sydney titled *Nuclear Energy for Australia?* attended by more than 200 delegates;
- We held an Australia-Korea workshop in Melbourne on the topic of Development of New Methods to Reuse, Recycle, and Recover Valuable Resources, which followed earlier meetings in Melbourne and Seoul;
- We ran two important workshops in Brisbane and Melbourne which have been significant in our contribution to national policy on productivity and international relations;
- The Academy launched the Drinking Water Recycling report commissioned by the Australian Water Recycling Centre of Excellence;
- We conducted a workshop in Adelaide on Advanced Manufacturing, *Transforming South Australia's Manufacturing Sector*, held with the SA Department for Manufacturing, Innovation, Trade, Resources and Energy;
- The Academy launched its *Food and Fibre Report* – the third in a three-part ARC program over three years;
- We have been leading an effort to measure and ultimately reward impact and industry engagement of public research institutes; and

■ In partnership with the other learned academies we led an analysis of the role of science, research and technology in lifting Australia's productivity.

As in every year over our history since 1976, people are the key to our success – those who lead the Academy and the individual Fellows and staff who contribute so strongly to its endeavours.

We have a vigorous Assembly, representing the broad Fellowship, which advises the Board on policy issues and is a vital group in maintaining the integrity and energy of the Academy. The Board itself is a key group of committed Fellows which oversees the Academy's operations and direction, supported by Division, Forum and Working Group chairs and committees of Fellows that focus on specific tasks to meet our aspirations.

The Fellowship is sustained by the annual election of a cohort of new Fellows, whose achievements and experience surprise us again each year and reinvigorate the capacity of the Fellowship.

Finally, I must also draw attention to the strong and dedicated performance of Dr Margaret Hartley FTSE, our CEO, and our entire team at the ATSE secretariat over the period. It is a pleasure to work with this professional and capable team.

Dr Alan Finkel AO FTSE
PRESIDENT

Emphasise our value to Australia in shaping national policy and enhancing public discussion of key issues.

CHIEF EXECUTIVE OFFICER'S REVIEW

INFLUENCING AUSTRALIA'S NATIONAL INNOVATION AND COMPETIVENESS AGENDA



The 2013-14 year saw the Academy achieve significant outcomes in delivering its objectives and priorities through providing sound, expert, and independent evidence-based advice on science and technology and innovation to Government, industry and the wider community.

Our priority focus on ATSE's seven National Technology Challenges allowed the Academy to enhance its input and influence over a range of industry sectors as it tackled the key challenge of promoting technology innovation to boost Australia's productivity and prosperity.

ATSE's contribution of the national debate on technological innovation and productivity has been of high quality and influential – reflecting its strategy plan alignment to a range of key national policy issues and the breadth of expertise within the Fellowship.

Benefits delivered over 2013-14

It is worth taking stock of the Academy's achievements over the year. It engaged on issues of national importance such as the role of innovation in productivity and prosperity and the importance of innovation for the competitiveness of Australian industry and business sectors.

In addition to the Learned Grant the Academy receives, it leveraged a further \$3.3 million in government grants and contracts, sponsorship and donations for 2013-14, which enable it to be very active over the year.

Overall, ATSE conducted some 45 symposia, conferences, seminars, workshops, lectures and other events for the year. It provided advice and assistance on matters of national importance through the publication of four major scientific

and technical reports; eight parliamentary briefings in Victoria and NSW; six editions of *ATSE Focus*, encouraging debate on specific science, technology and engineering issues.

The Academy responded to Government policy priorities – providing 11 formal briefings to Ministers and/or government departments and making 17 submissions to government – broadly relating to Australia's competitiveness and productivity across a range of areas covered by the ATSE National Technology Challenges.

Engagement of the Fellowship increased under the National Technology Challenges and the Academy formed three new Topic Forums – Infrastructure, Agriculture and Mineral Resources. The Academy Divisions were very active over the year and collectively held some 19 lectures/presentations across the country on a wide range of science and technology and innovation topics.

Engagement with stakeholders and the public remains an important goal. ATSE held six public lectures and contributed more than 30 media releases, opinion pieces and published articles. Further, the Fellows continued to serve the nation – representing ATSE on more than 50 committees (predominantly government) and advisory groups.

ATSE celebrated the importance of innovation and commercialisation excellence in its highly successful Clunies Ross Awards held in Perth in May 2014.

The next generation

The Academy continued its work in promoting STEM education in secondary schools.

In 2014 it held the Extreme Science Experience in Perth with 238 Year 10 students and their teachers from some 38

schools and the Wonder of Science Program engaged with some 760 students from years 6-10 and more than 200 schools in remote and regional Queensland were visited.

The Academy's flagship schools program, STELR, had 45 new schools join the program with a total of more than 50,000 students from 395 schools benefiting nationally. STELR (Science and Technology Education Leveraging Relevance) is now taught in six international schools – three in New Zealand and one each in Singapore, Indonesia and the Philippines.

ATSE was also active internationally, utilising its global networks and collaborative relationships to organise two workshops and a symposium.

The Academy also hosted a number of visiting delegations and operated exchanges with Korea, Japan and China. Further, special country bilateral activities were instigated with India, China, Japan, Indonesia and South Korea under the National Technology Challenges program.

Finally, ATSE successfully reviewed its governance frameworks, resulting in changes to the Constitution with enhanced strategy advice (including Assembly, Forums and Divisions) and enhanced transparency through the ATSE Board Charter.

Dr Margaret Hartley FTSE
CHIEF EXECUTIVE OFFICER

Enhanced input and influence over a range of industry sectors tackling the key challenge of promoting technology innovation to boost Australia's productivity and prosperity.

NATIONAL CHALLENGES

PROSPERITY THROUGH TECHNOLOGICAL INNOVATION – LEVERAGING OUR EFFORTS TO ENGAGE STRONGLY

Technology today is having more impact on our quality of life, longevity and our expectations than at any other time in history.

To capitalise on the opportunities afforded by technological innovation, many countries are re-emphasising the roles of education, research, science, technology, engineering and innovation in developing more prosperous and sustainable societies.

The Academy believes Australia can be, and should be, a leader in this re-emphasis and has adopted as a strategic impetus its National Technology Challenges – key areas where technological innovation has a role to play in ensuring we remain globally competitive.

Innovation and productivity

- Innovation policy, investment, manufacturing and productivity in our high cost environment;

Healthcare

- Cost-effective and enhanced healthcare for an ageing population;

Energy

- Transition to low-carbon energy sources and energy security;

Natural Resources

- Efficient and cost-effective natural resources management (including water sustainability);

Agriculture

- Improved agricultural yields and sustainable land use (including drought management);

Infrastructure

- Efficient and cost-effective infrastructure and transport for expanding cities and expanding sectors of the economy; and

STEM Education

- Improved quality and reach of science, technology, engineering and

mathematics education (STEM) at all levels.

ATSE made strong progress in addressing its seven National Technology Challenges in 2013-14.

1 Maximise the contribution of technology to innovation, investment and productivity

In August 2013 ATSE, in collaboration with ACOLA (the Australian Council of Learned Academies), hosted a workshop in Brisbane entitled *Translating Research into Productivity: Rethinking Linkages*. Attended by more than 40 Australian and international leaders in research, innovation and commercialisation, the workshop focused on drivers and barriers to effective research translation and commercialisation in Australia, resulting in an eight-page communiqué which fed into the Securing Australia's Future project *The role of science,*

research and technology in lifting Australian productivity.

ATSE also made several submissions addressing the contribution of technology to innovation, investment and productivity:

- Assessing the wider benefits arising from university-based research discussion paper (August 2013);
- Tax Laws Amendment (Research and Development) Bill 2013 (January 2014);
- Australian Government Economic Review of South Australia and Victoria (January 2014);
- Australian Workforce and Productivity Agency Engineering Workforce Study Issues Paper (March 2014); and
- The Australian Government's Entrepreneurs' Infrastructure Programme (June 2014).

In May 2014, ATSE published an Innovation and Productivity Action Statement entitled *Translating Research into Economic Benefits for Australia*. This statement called for action to improve the



Professor Peter Cook CBE FTSE at the Canberra launch of the ACOLA *Unconventional Gas Production* report.



Dr Ron Cameron PSM FTSE, who heads the Nuclear Development Division of the OECD Nuclear Energy Agency, addresses ATSE's *Nuclear Energy For Australia?* Conference in Sydney.

NATIONAL CHALLENGES

commercialisation of research in Australia, through improving linkages between publicly funded research organisations and businesses, and targeted incentives for translational research and business development and innovation.

2 Advance technological solutions for a healthy Australia

The Academy's Health Technology Forum operates under leadership of Professor Karen Reynolds FTSE (chair), Professor Greg Tegart AM FTSE and Professor Neil Foster FTSE (deputy chairs). A survey was conducted of the Forum membership to plan actions related to the National Technology Challenges, which led to the formation of a series of focus groups to address the following topics:

- Deploy assistive technologies for the aged and disabled to improve quality of life;
- Develop technologies for personalised, preventive healthcare; and
- Grow and promote a medical device industry in Australia.

As a result of the consultations conducted with the Forum, a Health Technology Position Statement (*Advanced Technological Solutions for a Healthy Australia*) and three Action Statements (*Deploy Assistive Technologies to improve quality of life, Develop Technologies for Personalised and Preventive Healthcare, and Grow and Promote a Globally Competitive Medical Device Industry in Australia*) were written (published at the end of July 2014).

In December 2013, ATSE published the report *Healthcare in the Home* for the Victorian Department of State Development, Business and Innovation (DSDBI). The report was informed by five 'Innovation Master-Class' meetings held between a range of stakeholders across a broad range of areas relating to independent living, particularly health technologies (architects, technology developers, aged care providers). A key

outcome of this initiative was to identify where a group can add value surrounding service delivery, technology adoption, and device and communications connectivity to enable independent living. The overarching finding was that there was a need for a holistic approach to the integration of technology enabled services for healthcare in the home. Additionally, the workshop series served as a catalyst for creating collaborations between organisations.

3 Transition Australia to economic low environmental impact energy supply and use

ATSE held a National Conference (*Nuclear Energy for Australia?*) in Sydney in July 2013. Presentations from leading international and Australian authorities spanned the opportunities and threats inherent in nuclear and other energy options available to Australia if it is to meet its multiple goals. The conference was attended by 200 national and international experts and delegates from a variety of backgrounds.

In September 2013, ATSE provided a submission to the Inquiry into the *Implications for Western Australia of Hydraulic Fracturing for Unconventional Gas*, by the WA Legislative Council Standing Committee on Environment and Public Affairs. The development of this submission was led by Professor Peter Cook CBE FTSE and Dr Vaughan Beck FTSE and drew on the findings of the ACOLA Securing Australia's Future Report *Engineering Energy: Unconventional Gas Production*.

In February 2014, ATSE provided a submission to the Australian Government Department of Environment on the design of the *Emissions Reduction Fund Issues Paper*. The development of the submission was led by Dr John Bell FTSE, Mr Peter Laver AM FTSE and Dr Vaughan Beck FTSE with input from members of the Energy Forum and Climate Change Impact Advisory Group. Following from the submission to the Emissions Reduction Fund issues

paper, ATSE was invited to provide a submission to the Emissions Reduction Fund Green Paper. The submission called for sustained investment in, and support for, the development and deployment of low-emissions energy technology to meet emissions reduction targets.

Also in February, the Energy Forum made a submission to the Department of Industry's *Energy White Paper Issues Paper*. The submission called for a long-term and consistent energy policy that is integrated with industry policy and aligned with emission-reduction targets, to deliver reliable, affordable and sustainable energy supply and to underpin a favourable investment environment. The development of the submission was led by Dr Bruce Godfrey FTSE, Chair of the Energy Forum, and Dr John Soderbaum FTSE and Professor Dongke Zhang FTSE (Deputy Chairs), with input from Energy Forum Members.

ATSE provided a submission to the *Review of the Renewable Energy Target (RET)* in May 2014. The submission noted there is clear evidence that the RET is meeting the objectives of the Renewable Energy (Electricity) Act 2000 (REE) and that the objectives of the REE Act remain appropriate in light of failing electricity demand and the Government's target and policies for reducing greenhouse gas emissions.

Also in May, ATSE developed a *Sustainable Energy Future for Australia* Position Statement on moving to low-emission energy systems that are affordable, reliable and secure. The development of the Energy Position Statement was led by a small working group led by Dr Godfrey with input from the Energy Forum. The statement details ATSE's view that it is crucial for Australia to move to low emission energy systems that are affordable, secure and reliable in order to support Australia's sustainable development and future prosperity, and provides four key themes that need to be considered in an integrated approach to effective government policy.



Mr Peter Laver Am FTSE (Left) and Ms Karlene Maywald FTSE at the Melbourne launch of the *Drinking Water Through Recycling* report.

ATSE provided a submission to the *Inquiry into Hydraulic Fracturing in the Northern Territory* in May 2014. The submission drew on the ACOLA Securing Australia's Future Report Engineering Energy: Unconventional Gas Production and notes that while Australia is still in the early stages of shale gas exploration we must act quickly to assess the potential social, economic and environmental impacts of shale gas production, including impacts on the landscape, biodiversity and groundwater systems. As part of the submission, ATSE also provided a copy of the ACOLA report to Dr Allan Hawke, Commissioner of the Inquiry

4 Achieve efficient and sustainable resource management

In October 2013 ATSE published a report entitled *Drinking Water through Recycling: The Benefits and Costs of Supplying Direct to the Distribution System*, commissioned by the Australian Water Recycling Centre of Excellence. The report found that current regulatory regimes in Australia were

capable of safely integrating recycled water as a drinking water supply option, and that existing technology could produce safe, high-quality and reliable drinking water from treated sewage with appropriate oversight and management. In a separate statement in November 2013, ATSE called for the fair consideration of recycled water as a sustainable source of drinking water among the range of available options for Australian towns and cities.

In November 2013, ATSE made a submission to the National Water Commission's 2014 Triennial Assessment of the National Water Initiative.

In December 2013 the ATSE Board approved the formation of the Mineral Resources Forum and in early 2014, Professor Alison Ord FTSE was elected Chair of the Forum and Ms Denise Goldsworthy FTSE and Professor Veena Sahajwalla FTSE were elected Deputy Chairs. The Forum Leadership Group immediately started work on ATSE's National Technology Challenges and developed a draft Mineral Resources Position Statement on *An Efficient and Sustainable Mineral Resources Sector*. The

draft Position Statement was discussed at an ATSE high-level invitation-only industry round table meeting in May 2014 in Perth. The Forum Leadership Group is currently drawing on the discussions at the round table meeting to finalise the Mineral Resources Position Statement.

5 Improve agricultural productivity, quality and sustainability

In March 2014 ATSE published the report *Food and Fibre: Australia's Opportunities*. This report found that Australian agriculture and agrifood industries had a major opportunity to capitalise on the projected growth of Asia's middle class over the next decades by exporting high-quality, high-value food and fibre products. To be in a position to take advantage of these opportunities would require a long-term strategy and policy vision for agriculture and food in Australia, developing a coherent platform to leverage Australia's comparative advantage in clean, sustainable and high-quality produce, enhancing innovative capacity in these sectors, and enabling collaboration

NATIONAL CHALLENGES



Taking the nuclear message across Australia (from left) Professor Peter Guthrie, Dr Ron Cameron PSM FTSE, Mr Timo Aikas and Mr Ian Duncan FTSE at Adelaide University.

between agrifood businesses, food processors and researchers.

ATSE published an Agriculture Position Statement *Enabling Growth in Agriculture* in April 2014. This statement envisages vigorous and globally competitive Australian agriculture and food industries thriving through investment in technology, science and engineering innovation. It identified a range of important areas where technology, science and engineering-driven innovation had key roles to play in achieving this, including: biotechnology, information technology services, water, environmental impacts and natural resource management, biosecurity, enhanced product specifications and certification, and waste reduction.

In April 2014 ATSE made a submission to the Commonwealth Government's Agricultural Competitiveness Issues Paper.

6 Achieve infrastructure to meet Australia's future economic and social needs

The Infrastructure Forum was established in November 2013. Dr Max Lay AM FTSE was elected Chair, and Professor Cynthia Mitchell FTSE and Mr David Singleton FTSE Deputy Chairs. Forum members were asked to comment on the on Australia's infrastructure challenges, and this information was used to develop an

issues paper. This was presented to the ATSE Assembly in April 2014 by Mr Singleton.

There was discussion by Assembly members around what should be included and topics that the Forum could examine. An infrastructure Position Statement will be completed in November 2014 and will focus on best-practice infrastructure planning and a set of over-arching principles for infrastructure planning aspirations for Australia.

The challenges relating to infrastructure have been re-developed based on the issues paper and currently encompass:

- a. Robust long-term infrastructure planning for a growing population
- b. Effective infrastructure development and delivery
- c. Implementing best practice whole-of-life infrastructure management
- d. Use existing infrastructure as effectively as possible

In November 2013, ATSE commended Infrastructure Australia (IA) on the report *Infrastructure Australia: State of the Nation* and provided comment on the initiative and feedback on how it can be further developed. ATSE highlighted that it could provide additional input from utilising the expertise of ATSE Fellows. The relationship between ATSE and IA has been further strengthened and discussions have taken place in the latter half of 2014.

Following the interest in the joint ATSE-

IA workshop in March 2013 *Infrastructure Planning: Towards Best Practice*, in March 2014, Dr Lay met with representatives from the Queensland Department of State Development Infrastructure and Planning and the Queensland Department of Transport and Main Roads. He met to discuss ATSE's work in infrastructure planning and for ATSE to hear about challenges that are unique to Queensland.

7 Improve quality and reach of science, technology, engineering and mathematics (STEM) education at all levels

In July 2013, the Education Forum provided a response to the National Science, Technology, Engineering and Mathematics (STEM) Strategy discussion paper. The response provided a number of recommendations in key areas including education, innovation, knowledge, influence and social compact.

An Education Forum Task Group was established in May 2013 to develop an *Advancing STEM Education Action Statement*. The Task Group was led by Professor Archie Johnston FTSE and included Dr Vaughan Beck FTSE, Professor Paul Greenfield AO FTSE, and Professor Mike Miller AO FTSE. The Action Statement received interest from a number of organisations and universities.

ATSE, through the Education Forum, made a submission to the Australian Workforce and Productivity Agency's *Engineering Workforce Study Issues Paper*. The submission focused primarily on employment issues related to engineering bachelor degree graduates, in responding to the questions posed by the issues paper. In addition, Professor Judy Raper FTSE represented the ATSE Education Forum at the AWPA Engineering Workforce Roundtable in May 2014, and the Forum Leadership Group provided comment on the AWPA Engineering Workforce Study Draft Recommendations.

STEM EDUCATION

MAKING SCIENCE RELEVANT FOR STUDENTS AND TEACHERS ACROSS AUSTRALIA THROUGH STELR

A key aspect of the Academy's commitment under its National Challenge 7 – to improve quality and reach of science, technology, engineering and mathematics (STEM) education at all levels – is its national program under the STELR banner (Science and Technology Education Leveraging Relevance), which has been operating since 2009.

Australian snapshot

By the end of the 2013-14 financial year, the STELR program had been implemented in 395 schools nation-wide. This involved more than 35,000 students and 1500 teachers each year. There has been an emphasis on recruiting remote and disadvantaged schools with some schools being based at indigenous communities. STELR has been adopted by many girls' high schools where the STELR approach is recognised as an ideal way to engage girls in science and technological careers.

STELR in New Zealand

The STELR program was implemented in three New Zealand schools. The schools were able to join the STELR Project through the assistance and insistence of our sponsors. Professional development workshops were held in the three schools in April. A training day was held in Auckland on 5 May with members of the team that provides professional development for science teachers for the New Zealand Education Department. The team now promotes STELR in their training sessions.

Funding and Sponsorship Universities

The University of New England provided sponsorship of \$50,000.

Corporate sponsors

Orica provided a donation of \$150,000 and the Australian Power Institute provided funding of \$75,000. These funds were used for base-line operations and to provide subsidies to schools from other parts of Australia.

The Australian Power Institute provided \$30,000 to produce re-usable solar car class sets for up to 60 STELR schools. Each class set contained equipment to build 14 solar



Students from St Mary's College, Hobart, working on their solar car (top); Townsville Shalom Christian College students (centre); Teachers study STELR in Bandung, Indonesia.

cars and were provided to schools free of charge. The resulting solar cars were judged by API bursary holders who also spoke about their careers in the renewable power industry.

CIGRE provided a grant of \$30,000, which enable STELR to be introduced in schools in New Zealand. RioTinto provided two video career profiles and 14 written career profiles for the STELR website and Orica provided one written career profile.

ARC Grant Success

Deakin University, ATSE and Stile Education Pty Ltd have received an ARC funding grant for a project entitled *Developing digital pedagogies in inquiry science through a cloud-based teaching and learning environment*. The project is administered by Deakin University. It extends innovative, cloud-based-teacher planning software to investigate the effective use of digital resources in inquiry science.

Australian Mathematics and Science Partnerships Program (AMSPP)

In July 2013 a consortium of Southern Cross University, the University of Wollongong, Charles Darwin University and ATSE submitted an application to the AMSPP Competitive Grant Round for a new \$1.6 million, two-year collaborative program to encourage student participation in mathematics and science in Years 11 and 12. The consortium will receive \$996,500 for the project entitled *Inspiring Science & Mathematics Education* (ISME). The consortium participants will provide the balance of the project funding in cash or kind.

ISME will enhance teaching and learning of the science and mathematics curriculum in Years 7 to 10 and involves the development of at least five multidisciplinary

STEM EDUCATION

classroom modules which use cutting-edge science and engineering contexts and the latest educational theory from the partner universities and other research institutions to excite and engage students.

ISME will use the expertise of science, engineering and education faculties at the universities and other research institutions to develop the modules to engage secondary students through relevant contexts. The modules will involve hands-on, inquiry-based science and mathematics activities supported by background information and career profiles of recent graduates working in the relevant industries.

STELR promotion

Sponsoring competitions

ATSE and STELR sponsored the 2013 South Australian Science and Engineering Challenge. A school at each venue received a STELR Renewable Energy Program student and teacher equipment kit.

STELR Renewable Energy Program student kits were given as prizes to 26 schools participating in the ATSE Queensland Division's Wonder of Science program.

STELR kits were also given as prizes at the Victorian Science Drama Awards, the Science Talent Search and Sydney University's iScience program.

Asia & Pacific Region

ATSE President Dr Alan Finkel AO FTSE and ATSE STELR Manager Peter Pentland were featured speakers at the ICASE 4th World Conference on Science and Technology Education (WorldSTE) held in Kuching, Malaysia.

Peter Pentland and STELR mentor Dr Gregory Smith, senior science education lecturer at Charles Darwin University, presented a workshop for science teachers and science education administrators from the Asia Pacific region in October 2013. The workshop was held at the SEAMEO Regional Centre for Quality Improvement of Teachers and Education Personnel (QITEP) in Science at Bandung, Indonesia.

It is sponsored by the International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC) under the auspices of UNESCO. The workshop was co-presented by La Main a la Pate from France. La Main a la Pate has championed inquiry-based science education throughout the world, especially in emerging countries. The workshop was attended by 50 delegates comprising teachers, science teacher educators and government advisors from across Asia.

The STELR activities and equipment packs were enthusiastically received and STELR is part of the network established following the workshop, with several countries expressing strong interest in incorporating STELR into their science curricula.

Orica funds provided a complete class set of STELR equipment for the renewable energy module for the SEAMEO Regional Centre at Bandung. The centre translated STELR materials into Indonesian.

A workshop on renewable energy was held in Bandung for 40 teachers from local schools. QITEP provided the STELR equipment and a translator and is using STELR equipment and resources in regular workshops, for example in Davao in the Philippines.

Professional Training

Professional development training is vital to the success of the STELR project as many secondary teachers do not have extensive science backgrounds, especially in the physical sciences. Professional development workshops were held in nine cities in Australia and New Zealand and numerous workshops were provided to individual schools by STELR staff and mentors.

STELR presented workshops at The National Conference of the Australian Science Teachers Association (CONASTA) in Melbourne; The Victorian Science Teachers Association Conference (STAVcon); and the Laboratory Assistants' Conference (Labcon).

Mentors

The STELR mentor program involves experienced teachers travelling to participating schools and supporting science teachers in the implementation of the program. Mentors encourage networking between schools and provide feedback on how the program is running in individual schools and to provide advice on improving the program's implementation.

There is one mentor in Tasmania, South Australia and the Northern Territory. There are two mentors covering each of Queensland, Western Australia, New South Wales and Victoria.

TEACHER FEEDBACK

At the end of 2013, teachers from STELR schools were invited to complete an on-line survey to evaluate whether or not STELR was achieving its aims. The results speak for themselves:

- Many schools are using STELR materials at multiple year levels.
- Over 50 per cent of schools reported an increase in students studying science at year 11. One school reported a 100 per cent increase in students studying physics at year 11.
- Boys and girls are more engaged with the STELR modules compared with regular science topics.
- Teachers teaching "out of field" are more confident teaching the STELR modules.
- Students are more aware of what is involved in engineering and technological careers and the study pathways necessary to gain access to these careers.
- The science literacy of students has increased in more than 80 per cent of schools.

WONDER OF SCIENCE

WONDER OF SCIENCE – TAKING STUDENTS ON A JOURNEY OF ENGAGEMENT

The Wonder of Science program aims to build passion and enthusiasm for science and technology for students in years six to nine in rural and regional Queensland schools.

In Semester 2, 2013 the program was implemented in 81 schools across central, north and far north Queensland involving 1400 students. Regional student conferences were held at Central Queensland University campuses in Rockhampton and Mackay and at James Cook University campuses in Townsville and Cairns – with a total attendance of 320 students, including two teams from the Torres Strait.

A team of 35 Young Science Ambassadors recruited from The University of Queensland and James Cook University visited the schools, supporting students with their Wonder of Science challenge projects. The Ambassadors also assisted with the student conferences – judging student presentations and conducting hands-on science workshops for the students and their teachers.

Wonder of Science was delivered to the Surat Basin region of South West Queensland in Semester 1, 2014. The program was implemented with sponsorship from a coalition of four coal seam gas companies who sponsor a larger STEM initiative for the Darling Downs Department of Education.

The Surat Basin program included 18 schools stretching from Dalby west to Roma and Injune and involved about 700 students. Representative teams from 17 schools participated in culminating student conferences in Chinchilla and Roma in June, where students presented their projects in a challenge format. Winners of the Challenge

were awarded a STELR kit for their school.

Some 160 students together with 48 teachers and supporters participated in the conferences. The post-conference student evaluations showed that students found:

- attending the conference was exciting and valuable;
- presenting their project was challenging and rewarding; and
- the workshops were enjoyable and interesting.

The teacher evaluations on the program were very positive about the impact on students. Teacher comments at the conference events affirmed the opportunity that Wonder of Science provides in “stimulating student enthusiasm and engagement with challenging tasks”

and that the students “exceeded their expectations in terms of commitment and resourcefulness” in responding to the tasks.

A team of 25 Young Science Ambassadors representing Queensland University of Technology, Griffith University, The University of Queensland and James Cook University were recruited for the program in 2014.

The Ambassadors visited participating schools early in the semester to support students with commencement of their projects and then again later in the semester as the students prepared for the regional conference. The Ambassadors remained in communication with students during the semester and participated as judges at the conferences.



Students in deep discussion at the Wonder of Science conference at Roma, Queensland.

GLOBAL LINKAGES

OUR GLOBAL LINKAGES FOSTER INTERNATIONAL TECHNOLOGY DIFFUSION AND INNOVATION

Underpinning the seven National Technology Challenges is the Academy's absolute belief that international cooperation and collaboration are keys to ensuring that Australia remains relevant to the rest of the world and has access to the latest in world technological developments of relevance to the nation.

Strong relations with sister academies, international scientific and research bodies, and Government ministries in partner countries, provide ATSE with a structure for joint activities and exchange of information via:

- Exchange visits, involving universities, research institutes and industry, sharing information and establishing new relationships;
- Joint workshops and delegations to exchange technical information and identify new collaborative opportunities; and
- Fostering international engagement and assisting Australian science and industry stakeholders to deepen people to people linkages.

These relationships and activities ensure sustained strong ATSE global linkages and networks.

ATSE has 23 international Fellows drawn from the Asia-Pacific, Europe and the Americas, allowing ATSE to utilise its extensive international networks and garner intelligence on a wide range of issues including new thinking in technology and innovation that can be utilised for Australia's benefit.

ATSE is an active member of the International Council of Academies of Engineering and Technological Sciences (CAETS), an independent non-political and non-government international organisation, encompassing 26 engineering and applied

science academies from Europe, Asia-Pacific region and the Americas. Participation at CAETS annual meetings and in CAETS projects gives ATSE direct links to influential Academies and their Fellows and enables us to network extremely effectively.

The Academy supports mid-career researchers to maximise ideas exchange and relationship building.

The Australia Japan Emerging Research Leaders Exchange Program (AJERLEP), established in 2010, has provided a highly cost effective "accelerator" to international collaborations via funding support from the Department of Industry and the Japan Society for the Promotion of Science.

Administered by ATSE and the Engineering Academy of Japan, it has progressed Australia Japan S&T linkages among the next generation of Australian Japan future leaders

Since the end of the year (August 2014) the Australia Korea Emerging Research Leaders Exchange Program (AKERLEP) has commenced, with six Korean mid-career researchers travelled to Australia to undertake a two-week visit program to progress individual and institutional linkages.

Principal international activities during 2013-2014 included:

Workshops

- Recycling Workshop with Korean Academy of Engineering, Melbourne, August 2013;
- ATSE/CERI Workshop with China, Melbourne, October 2013; and
- Low Emissions Fossil Fuels Workshop with Chinese Academy of Engineering, Melbourne and Brisbane, March 2014).

CAETS Energy Activity

The next CAETS project The Transition to a Lower Carbon Economy, will involve

11 Academies with the Indian National Academy of Engineering (INAE) chairing and administering the project.

10th Australia-China Symposia Series

This regular interchange was held in Nanjing, November 2013.

Australia Japan Emerging Research Leaders Exchange Programs

There were two exchanges – Japan to Australia (February 2014) and Australia to Japan (March 2013).

Australia China JCG

ATSE administers (for the Department of Industry) Australian Government's \$1.15 million funding support from the Australia-China Joint Coordination Group (JCG) Clean Technology Partnership Fund to support scientific exchange visits and workshops. In consultation with China Huaneng Clean Energy Research Institute (CERI) which acts as a strategic liaison point for ATSE in China, two competitive funding calls – Round 1 (July/August 2012) and Round 2 (February/March 2013) – have contributed towards:

- Eight workshops in Australia and China;
- 15 short-term exchanges (up to two weeks);
- 21 long-term exchanges (up to nine months);
- Two ATSE-CERI Workshops involving more than 180 participants; and
- Emerging Future Leaders Fellowships – participation by 22 Australian and Chinese Awardees in networking visit programs and attendance at ATSE-CERI Workshops and JCG Meetings.

The CAETS 20th Convocation

Held in Beijing in June 2014, the meeting focused on Engineering and the Future of Mankind, with a number of ATSE Fellows making keynote presentations and chairing sessions.



Dr David Brockway FTSE, workshop convener, with delegates at the Australia and Chinese Emerging Future Leaders meeting in Melbourne.



Dr Alan Finkel AO FTSE, ATSE President, with senior members of the Chinese Academy of Engineering on a visit to China.



Mr Peter Laver Am FTSE represented ATSE at the CSIRO Chinese Academy of Sciences meeting in Melbourne – Pictured (left) with Professor Zhang Yaping (CAS Vice President), Dr Megan Clark AC FTSE (CSIRO CEO) and Ms Patricia Kelly (Deputy Secretary, Department of Industry).



Dr Budhi Sujitmo (left) Secretary General of the Indonesian Academy of Sciences, and Professor Sangkot Mazuki (President) visit ATSE's Melbourne office.

Solar-based microgrids

The Indian National Academy of Engineering (INAE) and ATSE are progressing a joint project on solar-based microgrids.

Delegations/ Visitors

ATSE hosted meetings with several key visitors and delegations: President of The Royal Society; Engineering Academy of Japan; Malaysian Academy of Sciences;

Shanghai Association of Science and Technology; and Indonesian Academy of Sciences.

Bilateral relationship activities

This included high-level visits, attendance at formal dinners and events at embassies and consulates.

Development Activities

ATSE conducted significant development activities with key organisations in Canada,

China, Germany, India, Indonesia, Japan, Korea, Switzerland, Taiwan, UK and US.

CAESIE

ATSE supported and administered in Australia the Connecting Australian-European Science and Innovation Excellence (CAESIE) initiative, to establish S&T collaboration and partnership between small to medium enterprises (SMEs) businesses and researchers.

MAJOR EVENTS

FOSTERING THE ACADEMY'S ASPIRATIONS AND IMPACT ACROSS THE NATION

ATSE's seven Divisions conduct a wide spectrum of activities to support the ATSE mission – including seminars and workshops, presentations, site visits and briefings, often in conjunction with other bodies. These are increasingly aligned with our National Technology Challenges.

Divisions have established Parliamentary briefings in several states for parliamentarians and staff on key issues of interest. Experts in these areas of interest – often Academy Fellows – brief parliamentarian, advisors and parliamentary staff.

Innovating for our Food Future --- Mining boom to Dining Boom? was held by the **NSW Division**, in association with CSIRO and the Australian Institute of Food Science and Technology, in Sydney in May. The workshop concluded that the Australian food sector needed to change if it wished to achieve continuing growth and take advantage of domestic and international opportunities.

Earlier in the year, the Division, in conjunction with the Energy Forum, held a major national conference in Sydney – titled *Nuclear Energy for Australia?* – which examined the options for nuclear power in Australia. Follow-up events were held in conjunction with other divisions in Brisbane, Canberra, Melbourne and Adelaide.

During the year the **WA Division** organised its annual Eminent Speaker program, which achieves substantial outreach to secondary students, and Fellows from Western Australia played key roles in organising the 2014 ATSE Clunies Ross Awards in May in Perth, which celebrate the commercialisation of Australian invention and innovation.

This event was well-supported and well-attended and acclaimed again as the Academy's keynote for the year,

The **SA Division** held a major workshop with the SA Government in Adelaide in February – titled *Transforming South Australia's Manufacturing Sector* – which was opened by the SA Minister for Manufacturing, Innovation and Trade, Tom Kenyon.

It also conducted a series of three public lectures. The first put human cell therapy under the spotlight. It focused on drinking water recycling when it held its second public lecture in May where Government, public health and science experts discussed how to secure Adelaide's water supply. Its third major initiative was another public lecture on aligning R&D to optimise mineral resources.

The Division also conducted its annual science teacher awards.

The **Victorian Division** held a seminar on cell therapy – *Rebuilding the body, cell by cell* – in conjunction with the CRC for Cell Therapy Manufacturing, following up the earlier initiative of the SA Division.

The **Tasmanian Division**, in association with the Royal Society of Tasmania, held a public lecture series to examine the State's energy options – the first in June and the second four weeks later.

The **Queensland Division** held a public seminar in Brisbane in June, in conjunction with the Australian Water Recycling Centre of Excellence and the UQ Advanced Water Management Centre, which focused on drinking water options for south-east Queensland.

It also continued ATSE's Young Science Ambassadors Program – identifying young scientists who are able to inspire



Minister Kenyon opens the Adelaide Manufacturing Workshop.



Panellists discuss the key issues at the Mining Boom to Dining Boom seminar in Sydney.

school students in visits to primary and secondary schools in Brisbane and regional Queensland centres. This program was linked into the *Wonder of Science* Program which is emphasising to students across Queensland the excitement and opportunities of careers in science and technology.

The **ACT Division** and University House presented a lecture in April in Canberra by Professor Neil Williams PSM FTSE, former CEO of Geoscience Australia – titled *Does the Australian mining industry have a future?* It attracted 60 University House Fellows, graduate students, Government policy makers and researchers.

A wide spectrum of activities – seminars and workshops, education initiatives, presentations, site visits and briefings

CLUNIES ROSS AWARDS

REWARDING EXCELLENCE AND INSPIRING THE NEXT GENERATION OF SCIENTISTS

The Clunies Ross Awards help drive the ATSE mission by rewarding the best in commercialisation of research and innovation.

The Awards seek to identify and acclaim people who have, often against difficulties and always with persistent commitment, made important contributions to science and its application for the economic, social and environmental benefit of Australia. They are unique in recognising the simultaneous mastery of new technology and business expertise.

The Academy took the Clunies Ross Awards dinner and Extreme Science Experience to Perth for the first time in May – and the combined events were again an outstanding success.

The Clunies Ross Awards were presented at a gala dinner at the Perth Convention Centre attended by more than 370 eminent entrepreneurs, decision makers, government officials, researchers, academics and business leaders.

It was opened by Colin Barnett, Premier of Western Australia, followed by a keynote address from Professor Ian Chubb AC FTSE, Chief Scientist of Australia.

The following day the winners joined nearly 300 students and teachers from across Western Australia in the Extreme Science Experience with hands-on activities to excite students about science and technology.

The 2014 ATSE Clunies Ross Award winners were:

Dr John **Nutt AM FTSE (Lifetime Achievement Award)** for his ongoing contribution to the engineering profession and commitment to the advancement of the industry over the past 50 years.

Professor Kevin Galvin FTSE from the

University of Newcastle for his work in mineral processing and the development of innovative, cost-saving and effective minerals industry technology.

Dr Ezio Rizzardo FRS FAA FTSE, Dr Graeme Moad FAA and **Dr San Thang FTSE** for their work in have developing better ways of making polymers and plastics.

Mr Ravi Ravitharan, Mr Peter Mutton and Mr Graham Tew for their significant technical innovations in railway engineering.

Winthrop Professors Eugene Ivanov and Michael Tobar FAA FTSE for their invention of the world's lowest-noise oscillators, with multiple applications in fundamental research, high-tech communications and defence.



(From left) Mr Graham Tew, Mr Ravi Ravitharan and Mr Peter Mutton celebrate the Clunies Ross Award in Perth.



Nobel Laureate Professor Barry Marshall AC FAA engages with students at the ESE.

SPONSORS ARE THE KEY

The Awards and the Extreme Science Experience could not be held without the support of our sponsors. In 2014 they were:

- CSIRO
- BHP Billiton
- University of WA
- ANSTO
- University of NSW
- Curtin University
- Monash University
- University of Queensland
- DSTO
- Edith Cowan University
- Leighton Holdings
- Woodside
- City of Perth

Recognising Australia's leaders in innovation and commercialisation and encouraging students to pursue STEM careers



Catherine Hart from Orica with students at the Perth ESE.

AGM AND ORATION DINNER

INDUCTING OUR NEW FELLOWS AND HEARING SOME INSPIRING WORDS ABOUT THE FUTURE

The 2013 Annual General Meeting and the Oration Dinner at the Adelaide Hilton Hotel were highlights of the Academy year.

The AGM on 22 November:

- accepted the Academy's financial statements for 2012-13;
- appointed McLean Delmo Bentleys Audit Pty Ltd as auditors, replacing Mr Selwyn Cohen, who resigned after several years of service in accordance with best-practice recommendations; and
- agreed the new Academy Constitution.

Following the AGM, Fellows heard presentations from new Fellows on their work and aspirations, which were informative and inspiring.

The Oration Dinner was an outstanding evening with more than 180 Fellows and guests attending.

New Fellows were presented with Fellowship certificates and welcomed to the Academy in a well-managed ceremony

involving the President, Dr Alan Finkel AO FTSE and the Vice President Membership, Professor Mike Miller AO FTSE.

The SA Division did an admirable job in achieving an attendance of more than 180 and the organisation of the dinner was a tribute to the energy and expertise of the Academy staff.

The dinner came at the end of a two-day program which included the Academy's 11th Assembly, a joint meeting of Division and Forum Chairs, Workshops on Manufacturing and Health Technology, the Annual General Meeting and the New Fellows Forum.

Dr Finkel welcomed guests and set the tone for an enjoyable evening, which Fellows used to renew acquaintances and friendships and get to know the new Fellows attending.

The opening address by Tom Kenyon, the SA Minister for Manufacturing,

Innovation and Trade and Minister for Small Business, was challenging – he addressed some of the real issues of research translation and set the scene for the 2013 Oration.

Professor Tanya Monro delivered the 2013 Oration, which focused on research issues, translation of research into commercial results and the prospects for enhancing the national conversion rate of research. She also gave a neat insight into her role at the Institute for Photonics and Advanced Sensing (IPAS) at Adelaide University.

A survey of those attending the event showed that most rated it highly.

Governance issues and the induction of new Fellows precede the Annual Oration Dinner.



Academy President Dr Alan Finkel AO FTSE presents her Fellowship certificate to Dr Sue Barrell FTSE.



Professor Tanya Monro FAA FTSE delivers the 2013 Oration.

KEY RELATIONSHIPS

OUR RELATIONSHIPS BOOST COLLABORATION GOALS AND HELP ACHIEVE TECHNOLOGICAL SOLUTIONS

A vital strategic and operational focus for the Academy is to work cooperatively with key allies in government, industry and the research community to leverage its endeavours and impact across the nation.

ATSE is one of Australia's four Learned Academies and links with the others – the Academy of Science, the Academy of Social Sciences and the Academy of the Humanities – through its participation in the Australian Council of Learned Academies (ACOLA).

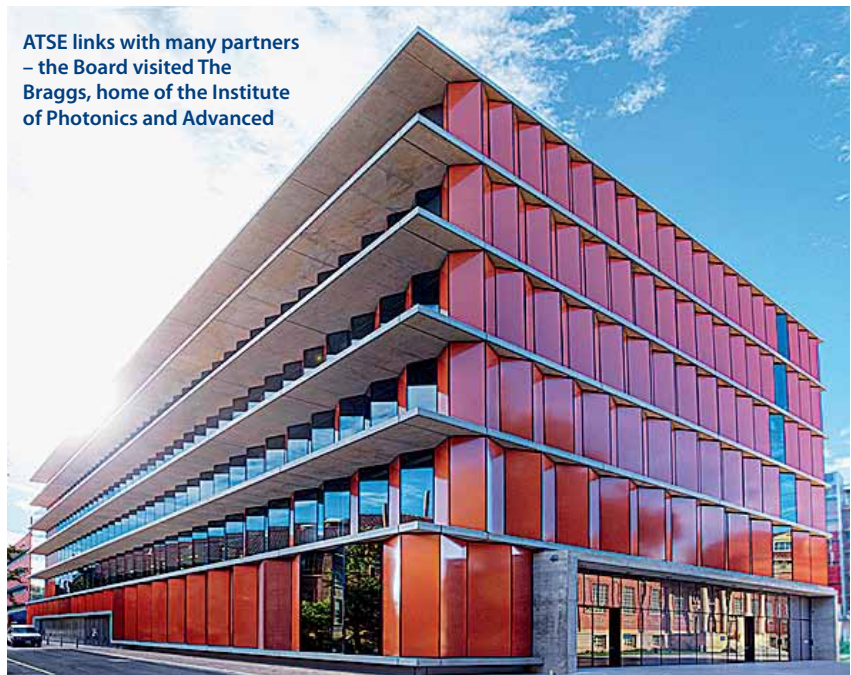
ATSE and the Academy of Science work closely together in international relations projects, often jointly undertaking projects or managing events. And increasingly, as multi-disciplinary projects become even more important in achieving national goals, the Academy is working with the other Academies, particularly in areas of technology that require humanities or social sciences input.

Through ACOLA – and through direct interaction – the Academy works closely with the Office of the Chief Scientist to provide evidence-based evidence advice that supports policy development in areas of strategic importance to Australia's future.

ATSE has a special and important relationship with a number of Australian Government Departments responsible for innovation, industry, science, research, education, resources, sustainability, environment, water, communications and primary industries. It also works closely on international matters with the Department of Foreign Affairs and Trade.

The Academy maintains close linkages with other professional and scientific bodies, including Science and Technology Australia, Engineers Australia, Australian Institute of Mining and Metallurgy and the

ATSE links with many partners – the Board visited The Braggs, home of the Institute of Photonics and Advanced



Institution of Chemical Engineers and the Australasian Industrial Research Group.

ATSE sponsor STA's annual Science meets Parliament event and works closely with the Australian Science Media Centre, The Royal Institution Australia, state branches of the Royal Society – as well as supporting the Prime Minister's Science Prizes and the Government's Fresh Science initiative, now renamed FameLab.

The Academy also maintains vital relationships with research organisations, like CSIRO, the Cooperative Research Centres and with many of Australia's tertiary bodies and key academic groupings. In many of these organisations ATSE Fellows hold leading positions.

Importantly, ATSE is often a key contributor to inquiries by Government agencies and Parliamentary committees, when they focus on technology issues. Academy Fellows participate strongly in

leading science and technology forums and advisory bodies, such as PMSEIC, and a large number of task groups.

Our Divisions participate strongly in many aspects of state government development of S&T policy and programs and our Fellows are heavily involved in relevant issues and projects.

Working with aligned organisations remains a cornerstone of the Academy's commitment enhancing Australia's prosperity through technological innovation.

Working with key allies in government, industry and the research community to help achieve national goals.

WOMEN IN TSE

ATSE POLICY AND PRACTICES VALUE WOMEN IN THE ACADEMY AND THE WORKFORCE

The number of women in leadership roles in the Academy has accelerated markedly since the introduction of the Gender Equity Policy* in December 2010.

The ATSE Board approved a revision of its Gender Equity Policy at its 17 December 2013 meeting and committed to a further review in two years.

The most significant impact of the policy has been the setting of a target of 33 per cent of new Fellows elected being women. The percentage of women Fellows elected has increased from 16 per cent in 2011 to 28 per cent in 2012 and 31 per cent in 2013.

Historically, women accounted for only 6.5 per cent of the Academy Fellowship but represented almost 10 per cent of the Fellowship at the end of the year under review.

The Academy recognises that more direct action is needed to address the gender imbalance both within the Academy membership and its activities as well as more broadly in promoting women in senior level in technological sciences and engineering in Australia.

The most visible change has been on the Board, with participation rising to 40 per cent. This has set a pattern of participation through the Academy.

Professor Kaye Basford FTSE joined Dr Susan Pond AM FTSE and Professor Tanya Monro FAA FTSE (both Vice Presidents) and Dr Leanna Read FTSE on the Board at 1 January 2014.

Professor Basford is Professor of Biometry at the University of Queensland and President of its Academic Board. Dr Read is a founder of Adelaide biotechnology company, TGR BioSciences, and serves on SA's Economic Development

Board and the SA Premier's Science and Industry Council.

Professor Monro is an Australian Research Council Georgina Sweet Laureate Fellow and also a member of the SA Premier's Science and Industry Council.

Dr Pond, who chairs the Board's Audit and Risk Committee, is Adjunct Professor at the United States Study Centre at the University of Sydney, Chair of the Australian Initiative for Sustainable Aviation Fuels (AISAF), Director of ANSTO and a Board member of Innovation Australia.

Professor Karen Reynolds FTSE was elected Chair of the ATSE Health Technology Forum from 1 January 2014. Professor Reynolds is Professor of Biomedical Engineering at Flinders University, was named SA Scientist of the Year in 2012 and listed as one of Australia Top 100 Engineers in 2012 and 2013.

Professor Judy Raper FTSE, Deputy Vice-Chancellor (Research), University of Wollongong, is Deputy Chair of the Education Forum and Professor Ana Deletic FTSE, Director of the Centre for Water Sensitive Cities with the Department of Civil Engineering at Monash University, is Deputy Chair of the Water Forum.

Dr Anita Hill FTSE was elected Chair of the Victorian Division for 2014. Dr Hill is Chief, CSIRO Process Science and Engineering, and guides its processing and metal production activities with a staff of more than 350 people across five Australian sites.

Dr Carrie Hillyard FTSE is Chair of the Queensland Division. She is a partner and co-founder of CM Capital and has led the Life Sciences practice at CM Capital for more than 10 years. She has more than 25 years' experience in medical and

diagnostics research, development and commercialisation and is a former Director of ANSTO

Dr Meera Verma FTSE is Chair of the South Australian Division. Dr Verma is known widely for her biotechnology company management and operation of commercial biological manufacturing facilities.

Outside the Academy our women Fellows made the nation take notice of their achievements.

Among other achievements, the following are notable:

- Ms Denise Goldsworthy FTSE, Deputy Chair of the Mineral Resources Forum and Managing Principal, Alternate Futures Pty Ltd, was appointed Chair of the Board for ChemCentre WA, the WA Statutory Authority accountable for the majority of chemical testing and analytical research and services to WA;
- Academy Vice President Professor Tanya Monro FAA FTSE joined the South Australian Economic Development Board;
- Telstra Chair and former CSIRO Chair, Ms Catherine Livingstone AO FTSE, was been elected President of the Business Council of Australia;
- Former WA Chief Scientist Professor Lyn Beazley AO FTSE was inducted into the WA Science Hall of Fame and named chair the new ARC Centre of Excellence in Integrative Brain Function;
- CSIRO CEO Dr Megan Clark FTSE and Toro Energy Chair and ANSTO Board member, Ms Erica Smyth FTSE, were named in the world's Top 100 inspirational women in mining, by the UK's Women in Mining group;
- Ms Sue Murphy FTSE, CEO of the WA



Denise Goldsworthy



The most visible change has been on the Board, with participation rising to 40 per cent. This has set a pattern of participation through the Academy.

Lyn Beazley

Water Corporation and immediate past Chair of the Water Services Association of Australia, was named by Engineers Australia as the national Sir John Holland Civil Engineer of the Year for 2013;

- Dr Susan Pond AM FTSE, was named the only Australian in the Top 100 People in the Bioeconomy, 2013-14, by *Biofuels Digest*;
- Dr Bronwyn Evans FTSE was appointed CEO of Standards Australia;
- President of the Australasian Industrial Research Organisation Ms Leonie Walsh FTSE was appointed inaugural Lead Scientist for the Victorian Government.

*The Academy's Gender Equity Policy "recognises leadership is needed to address the gender imbalance both within the Academy membership and its activities as well as more broadly in promoting women in senior level in technological sciences and engineering in Australia."

Working within the Academy and with allies across the community to enhance the role of women.



Bronwyn Evans

The Crawford Fund

FOCUSING ON THE IMPORTANT ROLE OF INTERNATIONAL AGRICULTURAL RESEARCH

The 2013-2014 year was marked by renewed energy to support the Fund's focus on the important role of international agricultural research.

A national consultation was followed by a national Canberra-based launch and then series of State-based events and stakeholder meetings related to the Task Force report that drew on the founding base of the Crawford Fund – *Doing Well by Doing Good*. A major advocacy and media effort explained the benefits to Australia from international agricultural research and substantiated our long-held contention with sound argument and independent analysis.

It is satisfying to note that the Australian Government has expressed on a number of occasions its strong support for the work of the Australian Centre for International Agricultural Research.

Research for the ARC-funded biography of Sir John Crawford is now underway. Chief Executive Dr Denis Blight AO is working with Dr Nicholas Brown and Associate Professor Frank Bongiorno from ANU; Professor Stuart Macintyre AO from the University of Melbourne and Dr David Lee from the Department of Foreign Affairs and Trade on this project. All Fellows who knew Sir John are encouraged to contact the Fund to add their memories and materials to the project.

The Fund's 2013 conference, *Mining, Agriculture and Development: Bread from Stones* in August 2013, broke the mould of more than 20 years of successful annual conferences in Parliament House Canberra. The Fund partnered with the Africa Australia Research Forum, during the mining event Africa Down Under in Perth. It brought together a broad grouping of mining and

agriculture specialists from across Africa, Australia and overseas to explore the nexus between mining and agriculture for development.

In looking for ways for the industries to work together, it was clear that the prominence and importance of the mineral resource industry should not obscure the importance of agriculture in these countries. The conference was a first step towards purposeful discussion on potential synergies between these two strong economic drivers in Africa and elsewhere.

A vital conversation on policy and practice has begun, with the Fund now working with the Australia Africa Mining Industry Group on a policy project to identify practical ways that this can be done.

A relatively new aspect of our annual conferences – that has really taken hold since its start in 2010 – is the encouragement for young people with an interest in international agricultural research and development to attend our conference, network and learn more about study and careers in a related field.

A group of young agricultural scientists and students are supported to attend and a special "Young Agricultural Scientists" event is held, with the Perth event involving keynote speakers from the conference and a group of African and Australian PhD students to discuss their work and careers.

The Fund's *Seeing is Believing* initiative enabling Australian journalists to experience agricultural research in developing countries included visits in 2013/14 to international agricultural research centres in Peru and Mexico by ABC Rural and Fairfax Regional Press journalists, with the assistance of DFAT's Council on

Australia Latin America Relations. This resulted in extensive coverage by the four journalists.

A third visit was arranged for *The Australian's* national rural affairs reporter to the so-called "Arctic Seed Vault" in Svalbard for the delivery of Australian seed by ATSE Fellows The Hon Tim Fischer AC FTSE and Dr Tony Gregson AM FTSE, resulting in national features around biodiversity conservation.

A new related activity is the Food Security Journalism award. In 2013, the Crawford Fund joined with the Australian Council of Agricultural Journalists to launch a competition that aims to encourage working Australian journalists to investigate the important roles that agricultural research, training and rural development play in global food security.

The prize is a *Seeing is Believing* visit to a developing country. The inaugural year saw a good mix of applicants and was won by Dr Elizabeth Finkel, Editor-In-Chief of Cosmos Media and author of *The Genome Generation*.

Our efforts to provide media and other assistance as a form of sponsorship to key national and international events continued in the year under review. Significant national media coverage was achieved for the Australia Agricultural and Resource Economists Society conference, the International Grasslands Congress and the CSIRO Food for Growth event. In addition, the Fund was invited to provide event management support for a meeting of the G20 Agricultural Chief Scientists in June 2014.

The Fund thanks all its partners and stakeholders for their involvement in our training activities through the 2013/14 period. With their assistance, the Fund

supported training for nearly 400 people from 36 different developing countries in workshops as well as individual and group training activities. The training covered more than 40 activities – either in Australia or in-country – on a broad range of skills related to crops; livestock; vegetables; soils; fisheries and aquaculture and also topics such as natural resource management; agri-business planning, and research management.

We supported three Master Classes which were held in Australia, Fiji and Vietnam, on adaptation to drought; communicating research to stakeholders and on agribusiness research methods, respectively. In total more than 60 people attended these Master Classes and

they came from Argentina, Azerbaijan, Bangladesh, Burkina Faso, Kenya, India, Iraq, Pakistan, Sudan, Tanzania, East Timor, PNG, Vietnam and from throughout the Pacific Islands.

After the completion of the term of Professor Robin Batterham FEng FAA FTSE, the former President of the Academy, the Fund's board welcomed Dr Alan Finkel AO FTSE to the Board, continuing the strong bond the Fund has with the Academy. The Board also welcomed Professor Kaye Basford FTSE, an ATSE Director, to the Board on the retirement of Ms Sallyanne Atkinson AO, who remains on the Queensland Committee.

We farewelled Dr Eric Craswell, who had served as Director of the Training

Program for the previous six years, but is continuing his connection with the Fund as a member of the ACT Committee. We welcomed Dr Colin Chartres, former Director General of the International Water Management Institute, as the new Training Director. We have also welcomed our part-time communications and administrative assistant Wendy Bortolazzo who is focusing her attention on our new website, launched in April, and the design and publication of documents.

Working at home and abroad to achieve a food-secure world.



The Hon Neil Andrew AO FTSE, chair of the Doing Well by Doing Good Task Force, presents the final report to The Hon John Kerin AM FTSE, Crawford Fund chair at the December launch.



The Hon Dr Florence Chenoweth, human rights expert, Africa Prize Winner and Minister for Agriculture in Liberia is interviewed by ABC after her 2013 Sir John Crawford memorial address.



The Master Class in Agribusiness Research Methods winds up in Hanoi with the presentation of certificates.



2013 Young Scholars with the Hon John Kerin AM FTSE.



The Hon Tim Fischer AC FTSE inside the Svalbard seed vault.

THE FELLOWSHIP

ACADEMY FELLOWS RECOGNISED AS LEADERS IN THE TECHNOLOGICAL SCIENCES

The Academy is an independent organisation dedicated to driving technological change for a better Australia.

It was formally inaugurated in February 1976. The concept of an applied sciences academy had its origins in the late 1960s when the Australian Industrial Research Group (AIRG), an informal association

of directors and managers of industrial research and development laboratories, appointed a small committee to study the proposal for such a body put forward by the late Dr W A S Butement, the former Chief Defence Scientist.

The Academy consists of some 800 Australian men and women who are notable

for their achievements in four areas of endeavour: Applied Physical Science and Technology; Applied Biological Science and Technology; Engineering; and Management, Development and Leadership.

Fellows are elected each year through a rigorous nomination process managed by the Academy's Membership Committee. The Fellowship covers many fields of endeavour – universities, research organisations, commerce, industry and government.

Many of our Fellows are recognised for their leadership and scientific achievements. In 2013-14 these included:

AUSTRALIA DAY HONOURS 2014

Professor Edward Byrne AC FTSE, Vice Chancellor, Monash University, was recognised for eminent service to tertiary education, particularly through leadership and governance roles with Monash University, to biomedical teaching and research, as a scientist and academic mentor, and as a contributor to improved global health.

Dr John Grill AO FTSE, former head of WorleyParsons, was honoured for distinguished service to engineering, and to business, to the minerals, energy and power supply industries, and as a supporter of advanced education and training.

Dr Andrew Liveris AO FTSE, Chairman, President and CEO of Dow Chemical, was honoured for distinguished service to international business through senior roles with multinational organisations, as a supporter of Australia-US educational and cultural relations, and to the community.

Dr Susan Meek AO FTSE, CEO of the Australian Academy of Science, was honoured for distinguished service to science, to the development and implementation of policy for science and research, particularly gene technology regulation, and through leadership role with professional organisations.

Professor Peter Newman AO FTSE, Professor of Sustainability, Curtin University of Technology, was honoured for distinguished service to science education as an academic and researcher, through contributions to urban design and sustainability, and to the community.

Mr Philip Laffer AM FTSE, former Chief Winemaker for the Orlando-Wyndham Group, was honoured for significant service to the Australian wine industry as a winemaker, and to trade, marketing and research and development programs.

Professor Graeme Young AM FTSE, from the Flinders Centre for Innovation in Cancer, was honoured for significant service to medicine through a range of research, clinical and academic roles, particularly in the area of gastrointestinal health.

QUEEN'S BIRTHDAY HONOURS 2014

Professor the Hon Dame Marie Bashir AC CVO FTSE, the Governor of NSW, was named a Dame in the General Division of the Order Of Australia. She was recognised for extraordinary and pre-eminent achievement and merit in service to the administration, public life, and people of New South Wales, to medicine, particularly as an advocate for improved mental health outcomes for the young, marginalised and disadvantaged, to international relations, through the promotion of collaborative health programs, and as a leader in tertiary education.

Dr Megan Clark AC FTSE, CEO of CSIRO, was honoured for eminent service to scientific research and development through fostering innovation, to science administration through strategic leadership roles, and to the development of public policy for technological sciences.

Dr Barry Jones AC FAA FTSE FASSA FAHA, former Minister for Science and President of the ALP, was honoured for eminent service to the community as a leading intellectual in Australian public life, through contributions to scientific, heritage, musical, medical, political and public health organisations, and to the Australian Parliament.

Academy President Dr Alan Finkel AO FTSE, Chancellor of Monash University, was honoured for distinguished service to science and engineering, and to tertiary education administration, as an advocate for the protection of children, and to philanthropy.



Professor Edwina Cornish



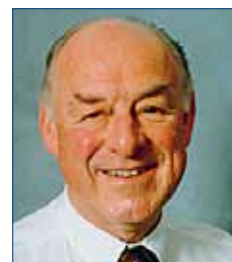
Professor Ed Byrne



Professor Graeme Young



Dr Megan Clark



Professor Ian Ritchie



Professor Rose Amal



Dr Terry Percival



Ms Kathryn Fagg



Professor Kevin Galvin



Professor Min Guv

Dr Ziggy Switkowski AO FTSE, Chair of NBNCo and Chancellor of RMIT, was honoured for distinguished service to the community, particularly to tertiary education administration, scientific organisations and the telecommunications sector, to business, and to the arts.

Professor Edwina Cornish AO FTSE, Provost of Monash University, was honoured for distinguished service to higher education, to advances in biotechnology and horticultural genetic modification, and through fostering of partnerships with government, industry and the community.

Emeritus Professor Ian Ritchie AO FAA FTSE, was honoured for distinguished service to science in the field of chemistry and hydrometallurgy, as an academic and educator, and to fostering technical innovation in business and industry.

Mr Richard Carter AM FTSE, former Chief Executive Officer BHP Minerals, was honoured for significant service to the mining and minerals sector, to professional standards and education, and to the Uniting Church in Australia.

Dr Terence Percival AM FTSE, Director, Broadband and the Digital Economy, NICTA, was honoured for significant service to science and technology through landmark developments in broadband and wireless communications.

Professor Michael McLaughlin AM FTSE, CSIRO Fellow, CSIRO Land and Water, was honoured for significant service to conservation and the environment, particularly through developing public policy on science-based strategies for minimising metals in the environment.

Professor Michael Poole AM FTSE, Honorary Research Fellow and Consultant, CSIRO, was honoured for significant service to environmental science as a leader, researcher and adviser to government.

Mr Ron Spithill OAM FTSE, Director, Vodafone Hutchison Australia and Hutchison Telecommunications (Australia) Ltd, was honoured for service to business, particularly to the telecommunications sector.

AWARDS AND APPOINTMENTS 2013-14

Professor Rose Amal FTSE, Director, ARC Centre of Excellence for Functional Nanomaterials, University of NSW, was again named as one of Australia's most influential engineers 2014 by Engineers Australia.

WA Chief Scientist Professor Lyn Beazley AO FTSE was inducted into the Western Australian Science Hall of Fame.

Professor John Beynon FTSE, Chair, Global Engineering Deans Council, was named as one of Australia's most influential engineers 2014 by Engineers Australia.

Mr Michael Chaney AO FTSE, Chair of National Australia Bank, was named on the 12-member Business Advisory Council announced in December 2013 by the Prime Minister.

Mr Peter Coleman FTSE, MD and CEO, Woodside, was named as one of Australia's most influential engineers 2014 by Engineers Australia.

Professor Graham Davies FTSE, Chair Go8 Engineering Deans, was named as one of Australia's most influential engineers 2014 by Engineers Australia.

Professor Hugh Durrant-Whyte FRS FAA FTSE, CEO of NICTA, was again named as one of Australia's most influential engineers 2014 by Engineers Australia.

Dr Bronwyn Evans FTSE, Chair of the Centre of Engineering Leadership and Management, was named as one of Australia's most influential engineers 2014 by Engineers Australia.

Dr Bob Every AO FTSE, Chairman of Wesfarmers and Boral, was again named as one of Australia's most influential engineers 2014 by Engineers Australia.

Ms Kathryn Fagg FTSE, Reserve Bank Director, was named as one of Australia's most influential engineers 2014 by Engineers Australia.

Dr Alan Finkel AO FTSE, ATSE President and Monash University Chancellor, was again named as one of Australia's most influential engineers 2014 by Engineers Australia.

Dr Catherine Foley PSM FTSE was awarded the 2014 Lloyd Rees Lecture in chemical physics by the Academy of Science.

Professor Kevin Galvin FTSE, Director, Centre for Advanced Particle Processing and Transport, University of Newcastle, was awarded a 2014 ATSE Clunies Ross Medal and was named as one of Australia's most influential engineers 2014 by Engineers Australia.

Mr James Graham AM FTSE, Group Chief Executive, Gresham Partners, was again named as one of Australia's most influential engineers 2014 by Engineers Australia.

Mr John Grill AO FTSE, Chair, John Grill Centre for Project Leadership, was again named as one of Australia's most influential engineers 2014 by Engineers Australia.

Professor Min Gu FAA FTSE won the 2013 Ian Wark Medal and Lecture.

Professor Jay Guo FTSE, Research Director, Smart Secure Infrastructure, CSIRO Digital Productivity and Services Flagship, was named as one of Australia's most influential engineers 2014 by Engineers Australia.

Mr Jim Hallion FTSE, CEO SA Department of Premier and Cabinet, was named as one of Australia's most influential engineers 2014 by Engineers Australia.

Professor Andrew Holmes AM FRS FAA FTSE was named President of the Australian Academy of Science.

Professor Chennupati Jagadish FAA FTSE was awarded the Australian Institute of Physics' 2013 Boas Medal.

Professor Graeme Jameson AO FREng FTSE was named 2013 NSW Scientist of the Year.

Mr David Knox FTSE, Chief Executive Officer and Managing Director of Santos Limited, was again named as one of Australia's most influential engineers 2014 by Engineers Australia.

Professor Peter Lee FTSE, Vice Chancellor, University of Southern Cross, was again named as one of Australia's most influential engineers 2014 by Engineers Australia.

Ms Catherine Livingstone AO FTSE was named on the 12-member Business Advisory Council announced in December 2013 by the Prime Minister.



Ms Susan Murphy



Professor Mark Randolph



Professor Grant Steven



Professor Stuart Wenham



Dr Neil Williams

Dr Andrew Liveris FTSE, Chair, President and CEO, Dow Chemical, was again named as one of Australian most influential engineers 2014 by Engineers Australia.

Professor Max Lu FTSE, Provost and Senior VP, University of Queensland) was again named as one of Australian most influential engineers 2014 by Engineers Australia.

Professor Thomas Maschmeyer FAA FTSE was honoured in the 2013 NSW Science and Engineering Awards, winning the Renewable Energy Innovation Category.

Ms Susan Murphy FTSE was named by Engineers Australia as the national Sir John Holland Civil Engineer of the Year for 2013 and named as one of Australian most influential engineers 2014 by Engineers Australia.

Dr John Nutt AM FTSE won the 2014 ATSE Clunies Ross Lifetime Achievement Award.

Dr Mary O'Kane FTSE, NSW Chief Scientist and Engineer, was again named as one of Australian most influential engineers 2014 by Engineers Australia.

Dr Adi Paterson FTSE, CEO, ANSTO, was again named as one of Australian most influential engineers 2014 by Engineers Australia.

Professor Mark Randolph FTSE was named 2013 WA Scientist of the Year.

Professor Judy Raper FTSE, Deputy Vice Chancellor (Research), University of Wollongong, was again named as one of Australian most influential engineers 2014 by Engineers Australia.

Dr Ezio Rizzardo FRS FAA FTSE was awarded a 2014 ATSE Clunies Ross Medal.

Dr Chris Roberts FTSE, CEO, Cochlear, was again named as one of Australian most influential engineers 2014 by Engineers Australia.

Emeritus Professor Grant Steven FTSE was awarded the 2014 AGM Michell Medal by the Mechanical College of Engineers Australia.

Dr Ziggy Switkowski AO FTSE was appointed Executive Chair of NBN Co.

Dr San Thang FTSE was awarded a 2014 ATSE Clunies Ross Medal.

Professor Michael Tobar FAA FTSE was awarded a 2014 ATSE Clunies Ross Medal.

Professor Stuart Wenham FTSE was awarded the Institution of Engineering and Technology's (IET) A F Harvey Engineering Research Prize and named as one of Australian most influential engineers 2014 by Engineers Australia.

Dr Neil Williams PSM FTSE won the 2013 Haddon Forrester King Medal in earth and related sciences.

Professor Graeme Young AM FTSE was named South Australia's Scientist of the Year for 2013.

Professor Ian Young AM FTSE, Vice Chancellor, ANU, was again named as one of Australian most influential engineers 2014 by Engineers Australia.

Professor Alex Zelinsky FTSE, Chief Defence Scientist and Head of DSTO, was again named as one of Australian most influential engineers 2014 by Engineers Australia.

Professor Paul Zimmet AO FTSE was awarded The Peter Wills Medal by Research Australia.

VALE TO OUR FELLOWS 2013-14

Dr John Allen AM FTSE died in Mackay on 22 August 2013, aged 88.

Dr Nick Archibald FTSE died in Perth on 9 June 2014, aged 63.

Mr Geoffrey Cook AM FTSE died in Melbourne on 10 June 2014, aged 86.

Mr John Curtis CB FTSE died in Brisbane on 10 July 2013, aged 93.

Mr John Edwards FTSE died in NSW on 13 February 2014, aged 71.

Emeritus Professor D W George AO FTSE died in NSW on 1 January 2014, aged 87.

Mr Keith Lewis CB AO FTSE died in Adelaide on 15 November 2013, aged 86.

Mr Alan Pearson OAM FTSE died at New Norfolk, Tasmania, on 2 July 2013, aged 90.

Professor Peter Schwerdtfeger FTSE died in Adelaide on 20 August 2013, aged 77.

Professor Raymond Stalker AO FAA FTSE died in Brisbane on 9 February 2014, aged 83.

Emeritus Professor Fred Smith AM FTSE died in Melbourne on 1 March 2014, aged 74.

Mr Brian Sadler PSM FTSE died in Perth on 25 March 2014, aged 76.

Sir William Tyree OBE FTSE died in Sydney on 25 October 2013, aged 91.



Clunies Ross Award winner Dr San Thang FTSE and his wife Louisa at the Clunies Ross dinner in Perth.

KEY PEOPLE

SUPPORTING THE ACADEMY

The Academy operates through its key Fellow bodies and a small Executive Office. The key bodies through which Fellows act to achieve the Academy's mission are

the Assembly, which meets twice a year to set the targets for the Academy; the Board, which takes responsibility for the operational policy to meet these targets;

and the Divisions and Forums, which assist the Assembly, Board and Executive Office to deliver the Academy's programs. Details of key people in the Academy bodies are:

THE ASSEMBLY 2014

- Dr Alan Finkel AO FTSE** - President
- Dr Meera Verma FTSE** - Deputy Chair
- Professor Mark Bush FTSE** - Chair, WA Division
- Dr David Cook FTSE** - Director, Chair, NSW Division
- Professor Gordon Dunlop FTSE** - Chair, Queensland Division
- Mr Kathryn Fagg FTSE** - Chair, Industry and Innovation Forum
- Dr Bruce Godfrey FTSE** - Chair, Energy Forum
- Dr Anita Hill FTSE** - Chair, Victorian Division
- Dr Carmel Hillyard FTSE** - Chair, Queensland Division
- Mr Richard Kell AM FTSE** - NSW Division
- Professor Robin King FTSE** - Chair, Education Forum
- Professor Ross Large FTSE** - Chair, Tasmanian Division
- Mr Kenneth Matthews AO FTSE** - Chair, Water Forum
- Professor Bob Menary OAM FTSE** - Tasmanian Division
- Professor Alison Ord FTSE** - Chair, Minerals Resources Forum, WA Division
- Dr Graeme Pearman AM FTSE** - Chair, Climate Change Impact Advisory Group
- Dr John Radcliffe FTSE** - SA Division
- Professor Tim Reeves** - Chair, Agriculture Forum
- Professor Karen Reynolds FTSE** - Chair, Health Technology Forum
- Dr John Soderbaum FTSE** - ACT Division
- Professor Robin Stanton FTSE** - Chair, ACT Division
- Professor Yi-Min Xie FTSE** - Victorian Division

DIVISIONAL SECRETARIES (AT PUBLICATION)

- ACT **Dr Danny Llewellyn FTSE** danny.llewellyn@csiro.au
- NSW **Mr Richard Kell AM FTSE** richard.kell@cardno.com.au
- Queensland **Mr Simon Bartlett** sbartlett@powerlink.com.au
- SA **Dr John Radcliffe AM FTSE** John.Radcliffe@csiro.au
- Tasmania **Professor Bob Menary OAM FTSE** r.menary@utas.edu.au
- Victoria **Professor Mike Xie FTSE** mike.xie@rmit.edu.au
- WA **Professor Lesley Parker AM FTSE** l.parker@curtin.edu.au

ACADEMY STAFF 2014 (AT PUBLICATION)

- Dr Margaret Hartley FTSE**
Chief Executive Officer
- Mr Bill Mackey**
Deputy CEO/ Executive Director Communications
- Ms Elizabeth Meier**
Executive Manager International Relations
- Mr Peter Pentland**
Executive Manager Schools Program
- Dr Matt Wenham**
Executive Manager Policy and Projects
- Ms Sue Wickham**
Executive Manager Operations and Events
- Mrs Lynn Pagoda**
Company Secretary and Governance Manager
- Dr Mark Bradley**
Project Manager CAESIE
- Dr Lauren Palmer**
Senior Research and Policy Officer
- Ms Anne Houston**
Senior International Officer
- Mr Andy Hastings**
Research and Policy Officer
- Ms Sarah Parker**
Research and Policy Officer
- Ms Sara Madderson**
Administration and Division Support Officer
- Ms Jane Crappsley**
Electronic Communications Officer
- Ms Maria Pridham**
Finance Officer
- Mrs Elvira Copur**
Administration Officer
- Ms Katje Kroenke**
Events Coordinator

The ATSE Board

LEADING THE ACADEMY ACTIVITIES

ATSE DIRECTORS AT 30 JUNE 2014 WERE:



Professor Kaye Basford FTSE

Professor Basford is Professor of Biometry at the University of Queensland and her research leadership and impact is at the interface between statistics, quantitative genetics and plant breeding, with a focus on building strong and influential partnerships.

Currently she is President of UQ's Academic Board (2012-14), previously Deputy President (2009-11) and Head of the School of Land, Crop and Food Sciences (2001-10).

Professor Basford is a member of the Board of Trustees of the International Rice Research Institute, the Grains Research Foundation Limited, Union College and the Crawford Fund. She has been President of the International Biometric Society and the Statistical Society of Australia Incorporated.

These various roles have enabled her to gain extensive experience in governance and strategic planning. She currently chairs the ATSE international strategy group.



Dr David Cook FTSE

Dr Cook lives in Sydney and holds a BE (Hons) from the University of Western Australia and MSc, PhD from the University of Calgary. He became a Fellow in 1990.

Dr Cook was a faculty member of the School of Civil Engineering, University of New South Wales, first Executive Director of the National Building Technology Centre and Executive Director of the Australian Nuclear Science and Technology Organisation from 1988 – 1994. He then served in various senior management positions for Boral Limited until 2004.

He is a Member of the Industry Advisory Network in the Faculty of Engineering and Information Technology at the University of Technology, Sydney.

Dr Cook has been a Member of the New South Wales Division Committee since 2006 and Chair since 2010. He also is a Member of the Academy Membership Committee.



Dr Alan Finkel AO FTSE

AlanFinkel_Education- Photo at 1 July 2014

Dr Finkel is an engineer, entrepreneur and philanthropist and has served as Chancellor of Monash University since January 2008.

Dr Finkel received his Bachelor of Engineering in 1976 and Doctorate in Electrical Engineering from Monash University in 1981, following which he served for two years as a neuroscience research fellow at the John Curtin School of Medical Research, located at the Australian National University.

For three years until 2012 Dr Finkel was involved in the provision of low-emissions electricity to operate electric vehicles.

Previously, for 25 years Dr Finkel ran Axon Instruments, an American company that made electronic instruments used by pharmaceutical companies in the discovery of new medicines.

Between running Axon Instruments and joining Better Place Australia, Dr Finkel established two magazines. The first, Cosmos magazine, promotes science awareness and the second, G magazine, promotes environmental sustainability.

Dr Finkel has a passionate interest in education. He established the Australian Course in Advanced Neuroscience to provide advanced training to young scientists. He also established a secondary school science program named STELR, administered by ATSE, which is currently running in nearly 300 secondary schools around Australia.

Dr Finkel currently serves as the Chairman of the Australian Centre of Excellence for All-Sky Astrophysics, a research consortium that is preparing to analyse the data from the world's largest radio telescope that will be built by the end of this decade.



Professor Peter Gray FTSE

Professor Peter Gray was appointed in 2003 as the inaugural Director of the Australian Institute of Bioengineering and Nanotechnology (AIBN) at the University of Queensland.

Prior to joining AIBN, he was Professor of Biotechnology and Director of the Bioengineering Centre at the University of New South Wales, and Senior Principal Research Fellow at the Garvan Institute of Medical Research in Sydney. He has held academic positions at University College London, and at the University of California, Berkeley and has had commercial experience in the USA working for Eli Lilly and Co and the Cetus Corporation.

Professor Gray is a founder and a past President of the Australian Biotechnology Association (AusBiotech). He serves on the Boards of Biopharmaceuticals Australia Pty Ltd, ACYTE Biotechnology Pty Ltd, the Advanced Water Management Centre, the Diamantina Institute for Cancer, Immunology and Metabolic Medicine, Engineering Conferences International (ECI) Inc, New York, and on a number of State and Federal Government committees in the fields of biotechnology, pharmaceuticals and education.

Professor Gray is an active researcher who has published and patented widely in the fields of bioengineering, the production of biopharmaceuticals and stem cell technology.



Dr Paul Greenfield AO FTSE

Paul Greenfield is Chair of the Australian Nuclear Science & Technology Organisation (ANSTO). He also chairs the International Water Centre, a joint venture between four universities, and the International Energy Centre, a joint venture between three universities and Xstrata Coal.

He has a Bachelors degree with Honours and a PhD in Chemical Engineering from the University of New South Wales and a Bachelor of Economics from The University of Queensland. Awarded the Chemeca Medal in 1995, he is a Fellow of the Institution of Chemical Engineers, UK and an Honorary Fellow of the Institution of Engineers, Australia.

Dr. Greenfield worked at The University of Queensland from 1975-2011. Initially a Lecturer in Chemical Engineering, he held the roles of Deputy Vice Chancellor (Research) and Senior Deputy Vice Chancellor and Provost from the mid 1990's until 2008. He was Vice Chancellor from 2008 -2011.

Dr. Greenfield has extensive experience as a Director and is currently a Director on a number of company boards. He has worked widely with industry on a range of projects spanning the biotechnology, water and energy sectors.

He currently holds positions on the boards of Healthy Waterways Ltd and the Great Barrier Reef Foundation as well as chairing two expert panels, one on Hazardous Wastes and one on water related issues in CSG extraction.



Dr Margaret Hartley FTSE

Dr Hartley lives in Melbourne and holds a BAppSci (RMIT) and PhD (Monash University). She joined the Academy as Chief Executive Officer in 2009.

Dr Hartley was previously the Principal Scientific Advisor to the Australian Government Department of Health and Ageing and the Director of the Office of Chemical Safety. She led the Department's human health risk assessment of pesticides and chemicals as well as regulatory policy and environmental health policy. She oversaw regulatory compliance activities for the licit use of narcotics, other controlled substances, antibiotics and drugs in sports and advised the Commonwealth on chemical security issues.

Dr Hartley was Australia's Industrial Chemical Regulator from 1997-2006, responsible for leading and managing the regulation of chemicals and cosmetics and promoting safe and sustainable use of industrial chemicals. As CEO she oversaw governance, financial, and all performance aspects of the business. She oversaw the implementation of best practice regulatory reform within the chemicals sector and led the development of a Community Charter for chemicals regulation and safe use.

Dr Hartley is a respected national and international leader and regulatory scientist with wide experience in leading and managing Australia's chemical regulatory policy framework, and developing and implementing related human health policy. She has led international harmonisation efforts in risk assessment methodology via OECD and WHO programs.

She held research and academic positions in pharmacology and epidemiology at Monash University and the ANU before joining the federal Government.



Professor Michael (Mike) Miller AO FTSE

Professor Mike Miller lives in Adelaide and holds a BE(Hons)(Adelaide), MSc (Queens Canada) and a PhD (Hawaii). He became a Fellow in 1993.

He is Professor Emeritus at the University of South Australia, founder and Chairman Emeritus of mNet Corporation (now Mnet Group), member of the SA Government Space Development Advisory Group, and is on the Board of the Sir Ross and Sir Keith Smith Foundation.

He has a distinguished record in telecommunications technology research, especially in regard to mobile and satellite communications. He spent nine years with Telecom Australia and 35 years at the University of South Australia where he was founding Director of the Institute for Telecommunication Research.

He received a number of honours for his work including being Australian professional Engineer of the Year in 1995. In 2008 he was appointed an Officer of the Order of Australia (AO) for leadership in the innovation and development of future-generation telecommunications technology.

He has been an ATSE Director and Board Member since 2008 and is a past Chair of the SA Division. He is currently Vice-President (Membership).



Professor Tanya Monro FAA FTSE

Professor Tanya Monro is an ARC Georgina Sweet Laureate Fellow and Director of the Institute for Photonics and Advanced Sensing (IPAS) at the University of Adelaide. IPAS pursues a transdisciplinary research agenda, bringing together physics, chemistry and biology to create knowledge and disruptive new technologies.

Professor Monro is a member of the SA Premier's Science & Industry Council (PSIC). She was awarded the AAS Pawsey Medal for 2012 and in 2011 was South Australia's "Australian of the Year" and Scopus Young Researcher of the Year in Physical Science. In 2010 she was named SA Scientist of the Year and Telstra Business Women of the Year (Community & Government category). In 2008 she won the Prime Minister's Malcolm McIntosh Prize for Physical Scientist of the Year.

Professor Monro obtained her PhD in physics in 1998 from The University of Sydney, for which she was awarded the Bragg Gold Medal for the best Physics PhD in Australia in that year. In 2000 she received a Royal Society University Research Fellowship at the Optoelectronics Research Centre at the University of Southampton, UK. She came to the University of Adelaide in 2005 as the inaugural Chair of Photonics. She has published over 500 papers and raised over \$90M for research. As well as being active in research and research leadership, she serves on international, national and state committees and boards on matters of science and research policy and science evaluation and assessment.



Dr Susan Pond AM FTSE

Dr Pond lives in Sydney and holds a MBBS (Hons1) from the University of Sydney, MD from the University of New South Wales and DSc from the University of Queensland. She became a Fellow in 1996 and joined the ATSE Board in June 2010.

Dr Pond has a distinguished record in medicine, science and the biotechnology industry. From 1997-2009, she was Director of Pharmaceutical Research for six years and then Chairman and Managing Director of Johnson & Johnson Research Pty Ltd. In these roles, Dr Pond led the research and development of transformational diagnostic and therapeutic products and created strong alliances with research institutions, innovation networks, start-ups and established companies. She served as Chairman of AusBiotech Ltd for three years until 2008.

In her current position as Adjunct Professor at the United States Study Centre at the University of Sydney, Dr Pond is Chair of the Australian Initiative for Sustainable Aviation Fuels (AISAF). She is also Chair of the Australian Government Clean Technology Innovation Committee, Director of the Australian Nuclear Science and Technology Organisation, the Centenary Institute of Cancer Medicine and Cell Biology and Biotron Ltd and a Board member of Innovation Australia.

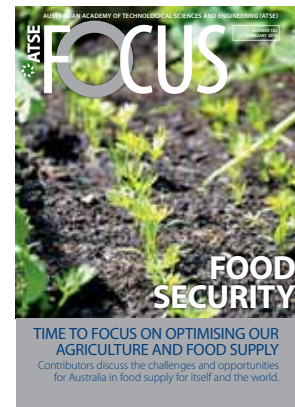


Dr Leanna Read FTSE

Dr Read was appointed to the ATSE board in January 2013 and brings extensive executive, board and investment experience in technology-based enterprises. A Fellow of the Australian Institute of Company Directors, she currently chairs the CRC for Cell Therapy Manufacturing and is a non-executive director of Biosensis Pty Ltd as well as a member of the Angel investor network, BioAngels. She is also a member of the Commercialisation Australia board, the SA Economic Development Board, the SA Premier's Science and Industry Council and the University of South Australia Council.

In addition to her current appointments, Dr Read has led a number of research and commercial ventures including the CRC for Tissue Growth and Repair. In 2001, she founded the South Australian biotechnology company, TGR BioSciences Pty Ltd, and served as the company's Managing Director and CEO until 2012. She also served on PMSEIC, as well as the Federal IR&D Board for six years.

A physiologist by training, She has 90 scientific papers and has been awarded an Honorary Doctorate from the University of SA, as well as a Convocation Medal from Flinders University. Other awards include the inaugural Biotechnology Industry Service Award by the Australian Biotechnology Association (now AusBiotech); a Centenary Medal for services to the Industry R&D Board; the 2006 SA Premier's Award for Science, Technology and Innovation Management Excellence; and the 2006 South Australian of the Year in the category of Science and Technology.



2013-14 FINANCIAL SUMMARY

PRINCIPAL OBJECTIVES

The long-term objective of the Academy is to promote in Australia the application of scientific and engineering knowledge to practical purposes. The activities of the Academy during the financial year were directed towards our key strategy of enhancing Australia's prosperity through technical innovation.

In particular, the Academy:

- provided evidence-based advice on a range of technology and innovation policy issues to governments, industry and the community;
- provided a forum for debate and policy formulation on important national issues;
- funded projects on matters of major national significance;
- fostered and recognised excellence in technological sciences and engineering;
- fused its international linkages to provide access to expertise from around the world;
- conducted a program in some 400 Australian secondary schools to promote the relevance of science and technology and a more scientifically literate society; and
- provided training and other activities to promote agricultural research in Australia and sustainable improvement in agriculture in developing countries.

PRINCIPAL ACTIVITIES

The principal activities included governance and strategy (Learned Body), technical projects, international linkages, schools education programs – STELR (Science and Technology Education Leveraging Relevance) national program and the Queensland Wonder of Science program, ATSE Clunies Ross Awards events and the Crawford Fund Limited. Each engaged in significant activities and contributed to positive outcomes during the year.

During the year the Academy continued to operate Topic Forums in key policy areas of Education, Energy, Health Technology, Infrastructure, Mineral Resources and Water. Two new Forums were established in June 2014: Agriculture and Industry and Innovation. The Academy operated two Advisory Groups — one on Innovation and the other on Climate Change Impact.

The Academy published two Position Statements (Agriculture and Energy) and two Action Statements (STEM Education and Innovation and Productivity), as well as major reports on Water and Food and Fibre.

The Academy also operated substantial programs in states and territories through its seven State and Territory Divisions. It contributed 15 formal submissions to a variety of government inquiries.

Through its science education program, STELR, the Academy has interfaced with some 35,000 secondary school students at various year levels, mainly in Year Nine. We trained 95 secondary science teachers and 15 laboratory technicians in Australia and 12 teachers and three laboratory technicians in New Zealand, 30 secondary teachers in Indonesia and also trained 40 educators from the Asia Pacific region. QITEP (the SEAMEO Regional Centre for Quality Improvement of Teachers and Educational Personnel in Science, Indonesia) trained

30 teachers in the Philippines using STELR equipment and activities, and also translated STELR resources into Indonesian.

The Academy conducts assessment of the impact of its activities to measure their contributions to the achievement of its objectives. The directors are satisfied that all of its activities are contributing satisfactorily, either directly or indirectly, to the Academy's goals and objectives.

There has been no significant change in the principal activities of the Academy from the prior year.

OPERATING RESULT

The operating result for the consolidated group (ATSE and Crawford Fund Ltd) showed a total revenue of \$7,260,964 compared to total revenue for the previous year of \$6,407,885. This represents a strong 13 per cent growth in revenue overall. The total surplus for the consolidated group of \$430,582 represents a 24.8 per cent decrease (due to the operating expense increase in the Crawford Fund) from the previous year but represents a financially viable group. The operating surplus represents some seven per cent of revenue. The net asset financial position in financial year 2014 is very strong with gross assets of \$11.49 million and liabilities of \$2.57 million (or 22 per cent of assets). The valuation on investments increased by \$550,252 (8.3 per cent) from the previous year with the consolidated group's investments valued at \$7,202,061 at the end of the 2014 financial year.

2013-14 DONATIONS

The Academy received donations during the year totalling \$46,610, principally for the STELR Program.

STATEMENT OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME FOR THE YEAR ENDED 30 JUNE 2014

Australian Academy of Technological Sciences and Engineering Limited
ABN 58 008 520 394

STATEMENT OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE YEAR ENDED 30 JUNE 2014

	Consolidated Group		Parent Entity	
	2014	2013	2014	2013
	\$	\$	\$	\$
Revenue	7,260,964	6,407,885	5,672,345	4,766,769
Expenses				
Learned Fund	(2,226,866)	(2,072,738)	(2,226,866)	(2,072,738)
Endowment Fund	(370,118)	(329,695)	(370,118)	(329,695)
Technical Projects	(538,351)	(409,051)	(538,351)	(409,051)
International Science and Technology	(1,186,651)	(684,107)	(1,186,651)	(684,107)
STELR	(595,884)	(526,832)	(595,884)	(526,832)
ATSE Clunies Ross Foundation	(362,745)	(363,842)	(362,745)	(363,842)
Crawford Fund Limited	(1,549,767)	(1,449,122)	-	-
	<u>(6,830,382)</u>	<u>(5,835,387)</u>	<u>(5,280,615)</u>	<u>(4,386,265)</u>
Surplus for the year	430,582	572,498	391,730	380,504
Other comprehensive income				
Items that may be reclassified subsequently to profit or loss:				
Fair value gains on available-for-sale financial assets	146,267	394,570	146,267	394,570
Other comprehensive income for the year	146,267	394,570	146,267	394,570
Total comprehensive income for the year	576,849	967,068	537,997	775,074

The full Audited Accounts of the Academy for 2013-14 can be viewed on the ATSE website (www.atse.org.au) and printed copies are available from the ATSE office (03) 9864 0900 or by email lynn.pagoda@atse.org.au

STATEMENT OF FINANCIAL POSITION AS AT 30 JUNE 2014

Australian Academy of Technological Sciences and Engineering Limited
ABN 58 008 520 394

STATEMENT OF FINANCIAL POSITION
AS AT 30 JUNE 2014

	Consolidated Group		Parent Entity	
	2014	2013	2014	2013
	\$	\$	\$	\$
ASSETS				
CURRENT ASSETS				
Cash and cash equivalents	3,407,554	3,253,163	2,685,489	3,006,956
Trade and other receivables	398,803	1,440,690	303,513	1,270,835
Financial assets	40,344	543,401	-	-
Other assets	91,305	80,899	34,856	49,814
TOTAL CURRENT ASSETS	3,938,006	5,318,153	3,023,858	4,327,605
NON-CURRENT ASSETS				
Financial assets	7,202,061	6,651,809	7,202,061	6,651,809
Plant and equipment	117,582	133,055	97,268	118,529
Intangible assets	236,572	179,869	236,572	179,869
TOTAL NON-CURRENT ASSETS	7,556,215	6,964,733	7,535,901	6,950,207
TOTAL ASSETS	11,494,221	12,282,886	10,559,759	11,277,812
LIABILITIES				
CURRENT LIABILITIES				
Trade and other payables	2,261,561	3,697,465	2,068,786	3,390,623
Provisions	255,953	147,141	238,308	129,925
TOTAL CURRENT LIABILITIES	2,517,514	3,844,606	2,307,094	3,520,548
NON-CURRENT LIABILITIES				
Provisions	56,886	95,308	37,542	80,138
TOTAL NON-CURRENT LIABILITIES	56,886	95,308	37,542	80,138
TOTAL LIABILITIES	2,574,400	3,939,914	2,344,636	3,600,686
NET ASSETS	8,919,821	8,342,972	8,215,123	7,677,126
EQUITY				
Reserves	496,525	350,258	496,525	350,258
Retained surplus	8,423,296	7,992,714	7,718,598	7,326,868
TOTAL EQUITY	8,919,821	8,342,972	8,215,123	7,677,126

The full Audited Accounts of the Academy for 2013-14 can be viewed on the ATSE website (www.atse.org.au) and printed copies are available from the ATSE office (03) 9864 0900 or by email lynn.pagoda@atse.org.au

STATEMENT OF CHANGES IN EQUITY FOR THE YEAR ENDED 30 JUNE 2014

Australian Academy of Technological Sciences and Engineering Limited
ABN 58 008 520 394

STATEMENT OF CHANGES IN EQUITY
FOR THE YEAR ENDED 30 JUNE 2014

	Retained Surplus	Financial Assets Reserve	Total
	\$	\$	\$
Consolidated Group			
Balance at 1 July 2012	7,375,904	-	7,375,904
Retrospective adjustments	44,312	(44,312)	-
Balance at 1 July 2012 (restated)	7,420,216	(44,312)	7,375,904
Comprehensive income			
Surplus for the year (restated)	572,498	-	572,498
Other comprehensive income for the year:			
- net fair value gains on available-for-sale financial assets	-	394,570	394,570
Total comprehensive income for the year	572,498	394,570	967,068
Balance at 30 June 2013	7,992,714	350,258	8,342,972
Balance at 1 July 2013	7,992,714	350,258	8,342,972
Comprehensive income			
Surplus for the year	430,582	-	430,582
Other comprehensive income for the year:			
- net fair value gains on available-for-sale financial assets	-	146,267	146,267
Total comprehensive income for the year	430,582	146,267	576,849
Balance at 30 June 2014	8,423,296	496,525	8,919,821

The full Audited Accounts of the Academy for 2013-14 can be viewed on the ATSE website (www.atse.org.au) and printed copies are available from the ATSE office (03) 9864 0900 or by email lynn.pagoda@atse.org.au

STATEMENT OF CASH FLOWS FOR THE YEAR ENDED 30 JUNE 2014

Australian Academy of Technological Sciences and Engineering Limited
ABN 58 008 520 394

STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED 30 JUNE 2014

	Consolidated Group		Parent Entity	
	2014	2013	2014	2013
	\$	\$	\$	\$
CASH FLOWS FROM OPERATING ACTIVITIES				
Receipts of grants	3,816,277	3,661,522	2,534,713	2,213,237
Interest and investment income	854,887	1,187,455	806,451	1,148,571
Other receipts	2,419,803	1,818,366	2,136,548	1,553,984
Payments to suppliers and employees	(6,883,437)	(5,628,898)	(5,254,919)	(4,193,317)
Net cash provided by operating activities	<u>207,530</u>	<u>1,038,445</u>	<u>222,793</u>	<u>722,475</u>
CASH FLOWS FROM INVESTING ACTIVITIES				
Payment for plant and equipment and intangible assets	(152,211)	(131,447)	(140,275)	(127,319)
Proceeds from (payment for) other financial assets	99,072	(894,293)	(403,985)	(391,236)
Net cash used in investing activities	<u>(53,139)</u>	<u>(1,025,740)</u>	<u>(544,260)</u>	<u>(518,555)</u>
Net increase (decrease) in cash held	154,391	12,705	(321,467)	203,920
Cash and cash equivalents at the beginning of the financial year	<u>3,253,163</u>	<u>3,240,458</u>	<u>3,006,956</u>	<u>2,803,036</u>
Cash and cash equivalents at the end of the financial year	<u><u>3,407,554</u></u>	<u><u>3,253,163</u></u>	<u><u>2,685,489</u></u>	<u><u>3,006,956</u></u>

The full Audited Accounts of the Academy for 2013-14 can be viewed on the ATSE website (www.atse.org.au) and printed copies are available from the ATSE office (03) 9864 0900 or by email lynn.pagoda@atse.org.au

ATSE TODAY

ENHANCING AUSTRALIA'S PROSPERITY THROUGH TECHNOLOGICAL INNOVATION

ATSE is an advocate for the role of technological innovation in improving our national prosperity. We use the term innovation to refer to the implementation of new or significantly improved products, processes, marketing methods or organisational methods in new business opportunities or new business practices.

ATSE is empowered in its mission by its 800 Fellows drawn from across industry, universities, research institutes and government, representing excellence and achievement in the technological sciences and engineering.

This distribution of skillsets amongst our fellowship allows ATSE to provide input on key national issues with the broadest and deepest of perspectives. ATSE is well positioned to contribute to and guide the debate on innovation for the national prosperity.

The Academy is staffed by a professional secretariat that provides policy development, project management, communications and professional services.

ATSE actively undertakes a wide range of activities, such as submissions to inquiries, topic workshops, symposia, parliamentary briefings, leading international delegations and publishing learned reports on specific topics.

To inform these activities ATSE encourages input from its Fellows via a number of operating groups such as state divisions and topic forums. Steps are being taken to increase the involvement of new Fellows, broaden the gender base of the fellowship and to increase the number of Fellows with an industry background.

The strength of ATSE's capability lies in its diversity of expertise and the capacity to identify industry policy challenges and link these to the opportunities for innovation presented by advances in technology.



Australian Academy of Technological
Sciences and Engineering (ATSE)

Australian Academy of Technological Sciences and Engineering (ATSE)

Annual Review 2013-14

ATSE Office

Level 1 / 1 Bowen Crescent
Melbourne VIC 3004

Mail address

GPO Box 4055
Melbourne VIC 3001

Phone

+613/(03) 9864 0900

Fax

+613/(03) 9864 0930

Email

admin@atse.org.au

Websites

www.atse.org.au
www.stelr.org.au
www.crawfordfund.org

AUSTRALIAN ACADEMY OF TECHNOLOGICAL SCIENCES AND ENGINEERING LIMITED
ACN 008 520 934 ABN 58 008 520 394