

# CHIEF SCIENTIST FOR AUSTRALIA



ANNUAL REVIEW 2009-2010



Chief Scientist



## **ABOUT US**

The Chief Scientist for Australia provides independent high-level science advice to the Prime Minister and Government. She is a leading advocate for science in the broader community as well as promoting Australian science internationally. The work of the Chief Scientist highlights the value of science as a cornerstone of our nation's health and prosperity and the importance of evidence-based thinking in public discourse.

The Office of the Chief Scientist is structured to support her through the provision of high-level strategic research, communication advice and administration services.

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# MESSAGE FROM THE CHIEF SCIENTIST

**“Contributing to the well-being of Australia through provision of clear, authoritative and independent scientific advice to her Government and her people.”**

That’s our mission in the Office of the Chief Scientist.

Perhaps the most important role of the Chief Scientist is to be a strong and continuous advocate of evidence-based decision making in Government. Foresight is one of the foundations that we attempt to bring to the scientific advice that is at the core of our mission. But a bit of hindsight can also be illuminating.

A little over 20 years ago, Australia appointed its first Chief Scientist, Professor Ralph Slatyer, and established his office in the Department of Prime Minister and Cabinet. Professor Slatyer was the Executive Officer of the Prime Minister’s Science Council (now PMSEIC, the Prime Minister’s Science, Engineering and Innovation Council), a position I now hold as Chief Scientist for Australia.

The 1989/90 annual report indicated that a topic at the first meeting of the Science Council was ‘Global Climatic Change – Issues for Australia’ with the conclusion that, “despite considerable uncertainties, global warming was likely to occur and that it may already be underway.” Papers presented to the Council at that meeting recommended that Australia should explore options for phasing in measures to reduce greenhouse gas emissions.

The 1989/90 Council also discussed the difficulty Australian researchers faced in “keeping up with the rapid pace of international developments,” and in the commercialisation of the results of Australian research. One would be forgiven for thinking that the more things change, the more they stay the same.

Of course these problems were not easy to address then, nor are they now. We should not expect that solutions to complex issues in a changing environment will be fast, easy or permanent. Policy issues in particular are sometimes characterised as ‘wicked problems’: intertwined, knotty issues for which understanding the problem itself often evolves as key requirements change. That is why we need innovation in our approach to providing science advice to inform policy. Providing a genuine service to Government in the provision of independent scientific advice means recognising that many of Australia’s challenges are multi-faceted, complex and evolving.

Good responses require ‘systems thinking’ that embraces and uses the interconnectivity of the whole, rather than focussing only on individual components. Since the problems are often intergenerational, the best advice is backed by long-term thinking, continual evidence collection over a wide range of areas and sectors, and stable, nimble scientific advisory mechanisms. Robust solutions require collaboration across sectors, portfolios, and nations, as well as across traditional boundaries of the physical, biological and social sciences.

For our part in the Office of the Chief Scientist, we are beginning to define some of the transformational issues for Australia’s future, and collect the evidence and map the gaps in our scientific knowledge that will help to allow us to respond wisely.

We have instituted a foresight process into the work plan of the Prime Minister’s Science, Engineering and Innovation Council. As its first output, it identified that more rapid transfer of up-to-date knowledge from neuroscience, and the cognitive and behavioural sciences into classrooms would give Australia a strong advantage in the world and Australians a strong foundation for life-long learning and re-skilling. That report was presented to the Prime Minister this year and is publicly available on our website.

Two other PMSEIC reports are now being produced. The first describes how Australia can become more resilient through consideration of the scientific linkages, and possible policy linkages, of energy, water, and carbon and other greenhouse gases. The second report examines Australia and food security in a global and changing context.

As Chief Scientist for Australia, communication with all stakeholders is vital. When PMSEIC reports are presented to Government, they are made available through a number of mechanisms, including on our web site, which also houses other important work from my Office, and current science and technology news presented in an easy-to-understand manner. I hope you will take the opportunity to visit my website and continue to engage with us.

The accomplishments summarised in this inaugural Annual Review of our first full year as an Office could only have been achieved with the dedication, excellence and teamwork of the staff that supports me, and those of you who have collaborated with us to achieve these first mission milestones.

As I have interacted with stakeholders across Australia, whether they be members of remote Indigenous communities or learned Academies, CEOs of business or scientists working in the community, students or representatives of the highest level of Government, I have been struck by the resilience and tenacity of our nation’s people and their pursuit of excellence. These characteristics will stand us in good stead as we continue to contribute together to the well-being of Australia.

**Professor Penny D Sackett**  
Chief Scientist for Australia

Contributing to the well-being of Australia through provision of clear, authoritative and independent scientific advice to her Government and her people.



## MESSAGE FROM THE EXECUTIVE DIRECTOR

Dear Colleagues,

Welcome. I am pleased to present this inaugural Yearly Review on behalf of the Chief Scientist for Australia and her Office.

In 2008, the Australian Government recognised the important role that the Chief Scientist should play in helping ensure Australia's wellbeing and resilience in the face of a changing world. This led to the Chief Scientist position becoming full time, thus placing Professor Sackett at the forefront of independent scientific advice to government and championing science within the community.

Our approach in supporting this role has been dynamic. We have engaged with a wide range of stakeholders, from the wider community through the media, and directly with representatives of government agencies and a diversity of industry sectors, schoolteachers and importantly students across Australia including in remote Indigenous communities.

This has seen the Chief Scientist broach challenging topics such as the science of climate change, the need to ensure a reversal of the diminishing trends in the uptake of science and mathematics as career options, science communication and ethics, strategic directions in national security... the list is long.

However, in spite of these important tasks, broader awareness of the role and function of the Chief Scientist and her Office is still limited. This Annual Review provides an opportunity to serve two important tasks, the first is to disseminate the role of the Chief Scientist and of the Office that supports her, and secondly to provide an account of our combined activities during our institution's first year. Although not a formal requirement, the intent is to provide an overview of activities in an open and responsive manner to the Australian community.

And it has been an exciting and productive year. The highlights of our work are covered throughout this review, but I would like to share with you what I consider to be the key milestones.

- ➔ The change management process that has seen the Office of the Chief Scientist evolve from a section within the Department of Innovation, Industry, Science and Research to a Division overseen by the Chief Scientist, who in turn reports directly to Minister for Innovation, Industry, Science and Research, Senator the Hon Kim Carr.
- ➔ The preparation of a four year work plan for the Chief Scientist and progress on development of associated strategic documents covering operational activities of the Office, communications, stakeholder engagement and science diplomacy.
- ➔ The application of a foresighting framework in identifying issues to be the subject of Expert Working Group reports to PMSEIC.
- ➔ The convening of PMSEIC 21 and ancillary meetings of its Standing Committee and the presentation of Expert Working Group reports
- ➔ The preparation and launch of the Chief Scientist web site and Facebook account as an effective outreach to the wider community, especially students.
- ➔ Engagement with the student community and importantly, the initiation of the Young Ambassadors for Science programme that will see Australia's top science students work as science advocates in their local communities.
- ➔ International liaison and high level visits to China, USA, New Zealand, Japan and Germany, both promoting Australian science capabilities in projects abroad and helping attract cooperative research projects.

One of the key elements helping us to achieve so much in such a short time has been undoubtedly the excellence of our staff, but also the goodwill of our colleagues across government, research institutions and other organisations who have been willing to open their doors and share their valuable time, advice and expert staff (through secondments). We hope this approach can be bolstered and that it continues to be a mutually beneficial cooperation as we continue to develop our corporate identity based on excellence in science advice.

As we embark on our second year of work, I am keen to continue to seek opportunities for engagement with you to ensure we are abreast of developments that require scientific advice. Of course this document can only meet its objectives if you find it useful. I encourage you to let us know what you think and how to improve it by following the instructions on page 24.

Thank you.

**Antonio Mozqueira**  
Executive Director

Contributing to the well-being of Australia through provision of clear, authoritative and independent scientific advice to her Government and her people.

# HIGHLIGHTS

→ An innovative foresighting methodology pioneered by the Prime Minister's Science Engineering and Innovation Council (PMSEIC) this year garnered strong interest internationally, with several countries seeking advice on possible adoption of a similar model. The framework looks at possible long-term transformational futures for Australia and ways that science may be used to capitalise on the opportunities and minimise the risks that these futures present (see page 13). A number of topics identified through the application of this framework are now the subject of PMSEIC Expert Working Group Reports.

→ Internet users now have unprecedented access to science information through the Office of the Chief Scientist at their fingertips following the launch of the new website: [www.chiefscientist.gov.au](http://www.chiefscientist.gov.au). The site enables the general public to learn more about Australian science and the role of the Chief Scientist through Professor Sackett's blogs and topical science news articles (see page 18). In only eight months since its launch, the website received more than 12,000 unique visitors from 116 different countries.

→ The science of climate change, the role of human activities in modifying climate and the potential opportunities and threats posed by resource depletion, erratic weather patterns and rising temperatures featured prominently in speeches by the Chief Scientist. At her keynote address, 'Moving the world- Science and Leadership before and after Copenhagen', more than 200 government, industry and academic representatives gathered to hear Professor Sackett discuss the science behind climate change, how it is likely to affect the world, and the importance of showing innovation and leadership (see page 19).

→ More than 400 high-achieving high school science students have formed lifelong connections with each other, the Chief Scientist and their local communities through a new Young Ambassadors for Science program. Professor Sackett launched the program at the opening of the National Youth Science Forum as part of a strategic approach to improving student science engagement and community awareness of science (see page 14).

→ In recognition of Professor Elizabeth Blackburn's achievements as Australia's first female Nobel Laureate, the Office of the Chief Scientist hosted a series of events in her honour. The highly interactive events engaged women, students and government officials to help inspire future scientists and improve recognition of scientific achievements in Australia (see page 10).

→ Since many of Australia's scientific challenges are global ones, Professor Sackett used her role as a science diplomat to create valuable networks with senior science advisors and leaders across the world (see page 16). Of particular value was her meeting with officials from the United States of America in April 2010. A key topic was the ways local communities are taking the initiative on climate change action. A number of discussions about cooperative projects that stemmed from this visit are underway.

→ The Prime Minister, The Hon Kevin Rudd MP, several Ministers and leaders of science organisations from around Australia met for the 21st meeting of PMSEIC in March 2010. The primary focus of discussion was the expert report, *Transforming Learning and the Transmission of Knowledge* (see page 11). The Council agreed that a budget proposal be developed for Science of Learning Centres. This report was the first to be developed through the new PMSEIC foresight process, which identified learning as a long-term risk and opportunity for the nation.

→ Through a collaboration between the Federation of Australian Scientific and Technological Societies and the Office of the Chief Scientist, the Bell report, 'Women in science: Maximising productivity, diversity and innovation' was launched jointly by Minister for Innovation, Industry, Science and Research, the Hon Kim Carr and Professor Sackett. The report describes the value of women to science and makes recommendations for improving female participation in the scientific workforce (see page 19).

→ Australia's position as a global leader in scientific innovation was highlighted by the Chief Scientist at the World Science Forum in Budapest. Professor Sackett gave two invited presentations, one on the Bell report and the other on PMSEIC's unique foresighting role, both of which garnered extensive interest from international bodies (see page 16).

## ELIZABETH BLACKBURN NOBEL PRIZE LAUREATE

### Inspiring the future scientists of Australia: Nobel Laureate, Professor Elizabeth Blackburn visits Australia

In October 2009, Professor Elizabeth Blackburn made history when she was announced as Australia's first female Nobel Laureate. Professor Blackburn received her Nobel Prize for Physiology or Medicine for the discovery of telomerase, an enzyme that protects the ends of chromosomes and now plays an important role in cancer research.

To celebrate her achievements and promote science, the Office of the Chief Scientist organised a full day of events to allow Australians to meet Professor Blackburn, and share in the excitement of her inspiring success.

On the morning of February 16, the Prime Minister, the Hon Kevin Rudd MP, Professor Blackburn and the Chief Scientist addressed more than 100 year 5-6 students at the National Science and Technology Centre, Questacon, with a number of other schools across Australia attending via

video conference. Both Professors and the Prime Minister gave speeches encouraging students to consider science and participated in an activity demonstrating the function of telomerase.

Afterwards, Professor Sackett hosted a round table question and answer session at the Australian National University for 170 year 12 students from schools across Canberra. The students were given the opportunity to ask both Professor Blackburn and the Chief Scientist questions about their research and experiences as scientists.

In the evening, an event was held at Parliament House in honour of Professor Blackburn's achievements. Women in leadership roles from fields as diverse as defence, science and governance discussed ways they could collaborate, with many new partnerships formed during the course of the evening.

As Australia's first female Nobel laureate, Professor Blackburn is without a doubt an important role model for science in Australia. Through organising events which enabled students, women and community leaders to meet Professor Blackburn, the Office of the Chief Scientist helped Australia celebrate and value scientific endeavor together.



PROFESSORS BLACKBURN AND SACKETT ANSWER QUESTIONS FROM HIGH SCHOOL STUDENTS

## TRANSFORMING LEARNING AND THE TRANSMISSION OF KNOWLEDGE REPORT

A multidisciplinary expert group of researchers and educators reported at PMSEIC 21 that breakthroughs in our understanding of how our brains function, our motivations, and the science of teaching practice could transform learning, and enhance life-long outcomes for all Australians. The report, *Transforming Learning and the Transmission of Knowledge: Preparing a learning society for the Future*, uses science to challenge a number of commonly-held beliefs about how the brain functions, learns and ages. These include:

→ **'No new nerve cells can be made in the brain after birth, especially not in a mature or older adult'**

This is incorrect. The number of nerve cells is largely complete by the first few years of life. However, the brains of the majority of older people contain virtually the same number of neurons as that found in a young adult. Furthermore, it is now clear that new nerve cells are made throughout life in regions of the brain associated with learning and memory.

→ **'Men and women learn differently because they have different types of brains'**

This is incorrect. Sex hormones do affect certain brain characteristics like the size and number of certain types of nerve cells. However, there are no studies that show any basic differences in the mechanisms underlying learning and memory.

→ **'You can learn in your sleep'**

This may be partially true. Learning new material probably doesn't occur during sleep, however, periods of sleep or restfulness may allow memories to be replayed. Such replay can help to strengthen the memories.

→ **'There are critical periods when certain types of learning must occur'**

This is half-true. There are periods when learning skills like language are 'easier'. However, the brain maintains its ability to make new connections and memories throughout life. This means that learning any sort of skill is possible at any age. For instance, language acquisition is possible even in old age, although it may be slower and more difficult.

→ **'Use it or lose it'**

This old adage appears to be largely correct. The connections between nerve cells in the brain (synapses) that store memory are dependent on constant reinforcement. Continually providing stimulus through exploration or gaining new knowledge appears to be vital for maintaining maximum mental functioning.

**The report contains as its central recommendation the establishment of a Science of Learning Program, to be delivered through a number of interdisciplinary and inter-professional Science of Learning Centres, which will link the latest knowledge with educators and learners around the country.**

**The full report can be downloaded from [www.chiefscientist.gov.au](http://www.chiefscientist.gov.au)**

# PROVIDING INDEPENDENT ADVICE

The Chief Scientist provides high-level independent scientific advice to the Australian Government through several formal mechanisms. These mechanisms include the Prime Minister's Science, Engineering and Innovation Council (PMSEIC), of which she is Executive Officer, and serving as Chair of the Australian Climate Change Science Framework Coordination Group, which is tasked with delivering a framework that sets out Australia's climate change science priorities for the next decade. Professor Sackett is also an ex officio member of the Defence Science and Technology (DSTO) Advisory Board, which is charged with applying science and technology to protect and defend Australia and its national interests, and the Rural Research and Development Council, the Government's key advisory body on rural research and development.

**Whilst the Chief Scientist is responsive to requests from Government for advice generated as a result of emerging issues, she also provides proactive advice to the Prime Minister on issues she deems important in securing Australia's future.**

## PMSEIC

PMSEIC is comprised of Ministers, and science and business representatives, who provide advice on science and technology to the Prime Minister, who chairs the body. Issues relate to Australia's economy, education, future industries, security, and sustainable development in a modern world. In 2009, Professor Sackett introduced a unique foresighting function for PMSEIC in order to anticipate and report on the emerging, longer-term and transformational needs, threats and opportunities for Australia that may require a scientific response. The impending reports: *Australia and Food Security in a Changing World* and *Challenges at Energy-Water-Carbon Intersections* are examples of issues identified through the foresight process. The PMSEIC foresighting model has since been investigated by other nations seeking to improve their long-term direction setting, and has been formally recognised in the Council's new Terms of Reference.

As Executive Officer of the Council, the Chief Scientist and her office coordinate Expert Working Groups, the Standing Committee, report publication and PMSEIC meetings. In 2009-10, one PMSEIC meeting was held, at which the *Transforming Learning and the Transmission of Knowledge* report was presented.

## KEY ACTIVITIES 2009-10

- Improved the ability to identify future threats, challenges and needs of Australia and its people by implementing a foresighting process. The new model has proven to be highly successful and is regarded internationally as an exemplar model to assist policy development.
- Provided the opportunity for high-level policy makers to learn more about the science of learning and learning environments at the 21st meeting of PMSEIC where the *Transforming Learning and the Transmission of Knowledge* report was presented. The Council concluded that a budget proposal be developed for Science of Learning Centres.
- Contributed to a broad range of science policy discussions through the Chief Scientist's attendance at a number of meetings in her ex-officio roles, including at the Climate Change Science Framework Group, Rural Research and Development Council and DSTO Advisory Board meetings.
- Began an examination of resources and food security through two PMSEIC reports: *Australia and Food Security in a Changing World* and *Challenges at Energy-Water-Carbon Intersections*.
- Promoted the value and role of science in all policy development in meetings with Secretaries of various Australian Government departments.
- Invited policy makers to a Parliamentary Library session on the findings of the 2009 PMSEIC report, *Epidemics in a Changing World* to disseminate its findings on global health issues.

## Foresight

Foresight develops a long-term vision beyond the time frame of Government terms of office or most business planning. The foresight activities currently being undertaken by PMSEIC outline a set of possible futures based on potential positive and negative impacts of key trends, drivers and uncertainties likely to shape the future. By expert analysis of the possible futures, foresight indicates current and future actions that will assist in reaching preferred futures and steer away from undesirable ones.



THE 21ST MEETING OF THE PRIME MINISTER'S SCIENCE, ENGINEERING AND INNOVATION COUNCIL

# INSPIRING OUR YOUTH

**Australia's future depends on the youth of today becoming the scientists of tomorrow. In the face of an alarming, long-term trend of declining science and maths enrolments at school and university levels, more must be done to ensure that the youth of today pursue careers in science.**

In recognition of this, the Chief Scientist promotes science to a broad range of students, awakening their innate curiosity about the world around them and explaining how science can be used to understand it. She also highlights the diverse range of career paths available, including international opportunities, and emphasises how young people who are knowledgeable about science, can make a tremendous contribution to the future of our world.

To engage with young people, the Office of the Chief Scientist has embraced the use of social media. This year the Office launched the new website and facebook page to converse with young people and the community at large through a blog, weekly science articles and a collection of inspiring speeches and interesting reports.

This year also marks the introduction of the first ever Young Ambassadors for Science (YAS) program, which links top science students with their communities, each other and the Chief Scientist. The program encourages students to be involved in science through a variety of community events, contributions to key debates in the scientific arena and fosters a life-long appreciation for science. YAS has a tremendous outreach value – this year it engaged the 428 students recognised for their excellence by the National Youth Science Forum. Every year it is expected that a similar number of young people will join the YAS alumni.



PROFESSOR SACKETT EXPLAINS THE LAWS OF PHYSICS TO STUDENTS FROM ST BEDE'S PRIMARY SCHOOL



## Meet Bob Wu

Bob Wu can remember a history lesson in Year 7 in which he learnt about the scientific revolution and the influence of Isaac Newton and Galileo Galilei. He began to see the magic of science and the development of ideas. Since then, he's developed a keen interest in nanophysics and its extensive range of applications from the use of carbon nanotubes in creating space elevators to the application of nanotechnology in combating disease. Bob is a member of Australia's Science Olympiad team announced by Professor Sackett in June, and travelled to Croatia in July 2010 to compete at the International Physics Olympiads, where he won a Bronze medal.

## KEY ACTIVITIES 2009-10

- Launched the Young Ambassadors for Science program as a strategic outreach initiative that will have a great multiplier effect on the number of students engaged with science and promoting it within their local communities.
- Celebrated the value and importance of science in every day life by launching National Science Week in Canberra, Science in the City in Sydney and Queensland Science Week. Professor Sackett also aimed to improve student engagement in science by participating in National Science Week activities around the country, visiting two indigenous schools in Darwin, and another in Brisbane.
- Encouraged Year 6 students, teachers and parents at Lyneham Primary School (ACT) graduation to embrace their natural curiosity and value higher science subjects.
- Encouraged Australia's brightest young scientific minds to pursue diverse careers in science at the launch of the National Youth Science Forum.
- Gave students an opportunity to engage with Australia's first female Nobel Laureate Professor Elizabeth Blackburn, by hosting a morning tea at Questacon for more than 100 year 5 and 6 students, that was also broadcast to five other schools across Australia, and a round table question and answer forum for 170 year 12 students.
- Lauded the country's brightest scientific and mathematical minds at the official ceremony to announce the Australian Maths and Science Olympiad teams.

# SCIENCE DIPLOMACY

Many of the challenges we face such as climate change, international epidemics and food security are global in nature, and cannot be solved by any one individual, group, agency or nation.

A large collective effort built of separate actions is required to change our course; nothing less will suffice. To this end, the Chief Scientist plays a vital role in improving Australia's engagement and standing in the international science arena through her efforts in science diplomacy.

By meeting with overseas politicians, science agency leaders, academics, other science diplomats and by promoting science developments in Australia internationally, Professor Sackett worked to ensure that Australian expertise and capabilities in fields as diverse as agriculture, oceanography and climate change research received maximum exposure.

By developing bridges of trust and cooperation, existing scientific collaborations will be strengthened and new ones developed, resulting in enhanced outcomes of joint research and promoting freer flow of knowledge and expertise to the benefit Australia.

The Office of the Chief Scientist aims to continue its science diplomacy efforts in order to increase the number of valuable international collaborations and partnerships with Australian scientists.



## KEY INTERNATIONAL ACTIVITIES 2009-10

- Promoted Australian research capabilities worldwide through meetings with numerous Ambassadors for and to Australia, including those from Argentina, Japan, China and the US.
- Fostered important technological and scientific relations with Japan at the Science Technology in Society Forum, the Regional Climate Change Conference and a meeting with the President of Japan's Science and Technology Agency, Akira Takamatsu.
- Promoted Australia's capabilities in the Earth sciences at the International Council for Science-Earth System Research Workshop and meeting with High Commissioner to Atomic Energy, Dr Catherine Cesarsky.
- Canvassed Australia's advances in foresighting and improvement in the status of women in science through presentations at the World Science Forum in Budapest.
- Met with India's Chief Scientist to discuss areas of potential science cooperation.
- Strengthened relationships with China, one of the world's strongest emerging scientific economies, by engaging with the Chinese Academy of Science, the National Centre for Science and Technology, and the Guangzhou Institute of Energy Conversion.
- Discussed climate mitigation and adaptation strategies with key US delegates including the New Clean Energy Advisor to the US Government Professor, Daniel Kammen, California's Commissioner of Public Utilities, Commissioner Dian Grueneich and President Obama's scientific advisor John Holdren.
- Strengthened ties with our SKA Telescope project partner New Zealand and promoted Australian agricultural science by meeting with delegates from the New Zealand Ministry of Agriculture and Forestry, the Ministry of Foreign Affairs and Trade and the Ministry of Research, Science and Technology.

## A meeting with Professor Daniel Kammen

Professor Kammen is the New Clean Energy Advisor to the US State Department as well as Director of the Renewable and Appropriate Energy Laboratory at the University of California, Berkeley. Through their meeting, Professor Sackett explored new ways to promote community action against climate change at local, business and government levels. Her collaboration with Professor Kammen continues as he has just been named as the Chief Technical Specialist for Renewable Energy and Energy Efficiency of the World Bank.



Contributing to the well-being of Australia through provision of clear, authoritative and independent scientific advice to her Government and her people.

# COMMUNICATING THE SCIENCE

The benefits of science are all around us and part of our daily life experience - in our sport, our food, our buildings and our environment.

As we face increasingly complex challenges and embrace new opportunities, we will rely on science to provide evidence and develop enabling technology to address these issues. For this reason, it is crucial that the Australian public understand the role science plays in their daily lives.

Communication is therefore an important part of the work of the Chief Scientist and her Office. To ensure that complex science issues can be understood by diverse audiences ranging from primary school students through to politicians (and everyone in between), the Chief Scientist and her Office are required to tailor and adapt all communication, without compromising the scientific evidence. Messages from the Office are customised not only in terms of words, but also in the medium through which it is communicated. For example, to reach young and electronically savvy Australians, we communicate predominantly through the Chief Scientist website and Facebook, while other audiences may be reached via radio, TV and public discussions.

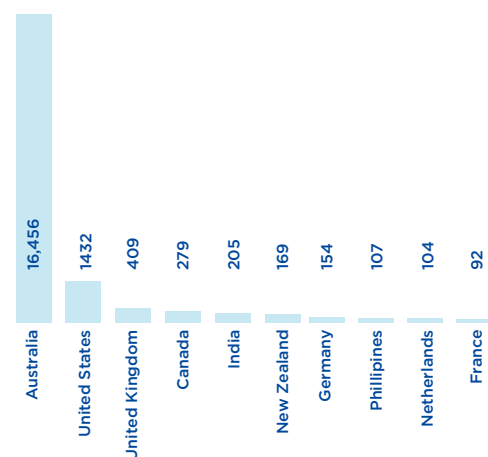
Through engagement with the media, the general public and the business community, the Chief Scientist leads Australia towards

a society that understands, enjoys and respects the processes of scientific enquiry. In 2009-10, Professor Sackett launched the new website, Facebook page, presented a keynote address on climate change, and frequently appeared on TV, radio and in newspapers as an advocate for science.

## CHIEFSCIENTIST.GOV.AU

Since the Chief Scientist website was launched in October 2009, it has received more than 16,000 hits with the average length of visit at about two and a half minutes. Visitors have come from more than 100 countries worldwide with Professor Sackett's blog being one of the most popular sections of the site. The Office of the Chief Scientist works to continuously improve its web presence by creating links and partnerships with other science websites and newsletters and by updating stories on the site weekly.

### Top 10 countries visiting



## KEY ACTIVITIES 2009-10

- Raised awareness of climate change and its effects by addressing more than 200 business and government representatives through the keynote speech *Moving the world - Science and leadership before Copenhagen* in Melbourne. The address is available on the Chief Scientist website.
- Contributed to the ethical debate about the role of science society at the keynote address at the Vincent Fairfax Fellowship launch titled *Scientists and society in an ethical world*.
- Encouraged the sporting community to consider ways to reduce the environmental impacts of sport events at the Sir Mark Oliphant CleanTech Green Sport Dinner in a speech titled *Australia: A nation of green champions?*
- Explained the issue of climate change certainty, uncertainty and risk, and the importance of science to society to a broad Australian audience through interviews with ABC Lateline, ABC radio, SBS World News and Sky News.
- Worked with other science communicators to improve climate change science dissemination at a Climate Change Communication Summit hosted by the Federation of Australian Science and Technological Societies.
- Improved key business leaders' understanding of climate change and its affects through presentations at company workshop days.
- Promoted the value and understanding of the individual science disciplines of astronomy and physics in public lectures across Australia.
- Increased access to the activities of the Chief Scientist and understanding of science through the launch of the Chief Scientist website and facebook page.
- Contributed to debate on the possibility of a low carbon economy on a panel with other sustainable economy experts and critics at the Future Summit in Melbourne.
- Promoted the importance of women in the scientific workforce by co-launching the Bell report, titled *Women in Science: Maximising productivity, diversity and innovation* alongside Senator the Hon Minister Kim Carr.

## Keynote

In December 2009, Professor Sackett delivered her keynote address on climate change. In front of almost 200 government, industry and academic representatives, she discussed the science behind climate change and how it would affect the world. The speech urged individuals to take action at a community, business and societal level in order to appropriately adapt to the environmental variations climate change predicts. Feedback received by the Office of the Chief Scientist was overwhelmingly positive and many audience members were impressed by Professor Sackett's clarity of message on such a complex issue.

# ABOUT THE OFFICE



## The Office of the Chief Scientist supports the Chief Scientist for Australia across all aspects of her role.

There are 14 permanent staff in the Office (including the Chief Scientist), however total staff numbers vary according to the number of secondees from government agencies, graduates on rotation, interns and staff on non-ongoing arrangements. As at June 30, the Office consisted of 19 staff members including two staff seconded from the Department of Agriculture Fisheries & Forestry, two graduate students and one intern. As a team, the Office coordinates the direct work of dozens of experts as well as orchestrating the meetings of the Prime Minister's Science, Engineering and Innovation Council, its Standing Committee and ancillary subcommittees, as well as a plethora of other meetings and special events.

On a total budget of \$2.3m the Office supports the Chief Scientist in three broad areas: research, communications and events, and administration and finance.

### RESEARCH

The Office undertakes research and analysis of a broad range of science, technology and innovation issues. Members of this team are qualified scientists who monitor current and future trends in science both domestically and internationally to ensure the Chief Scientist is kept abreast of scientific developments. They also liaise with other Australian Government departments and agencies responsible for science and innovation. To ensure the most up-to-date science advice is available, the Office frequently engages top experts across fields to work cooperatively in preparing science advice. The Office of the Chief Scientist does not manage research grants.

### COMMUNICATIONS AND EVENTS

The communication and events team supports the Chief Scientist in her role as an advocate for Australian science, both internationally and here in Australia. Activities include media liaison, facilitating public discussions, organising meetings with key international science figures, maintaining the Chief Scientist website and facebook page, planning key events and assisting in the promotion of science education and careers.

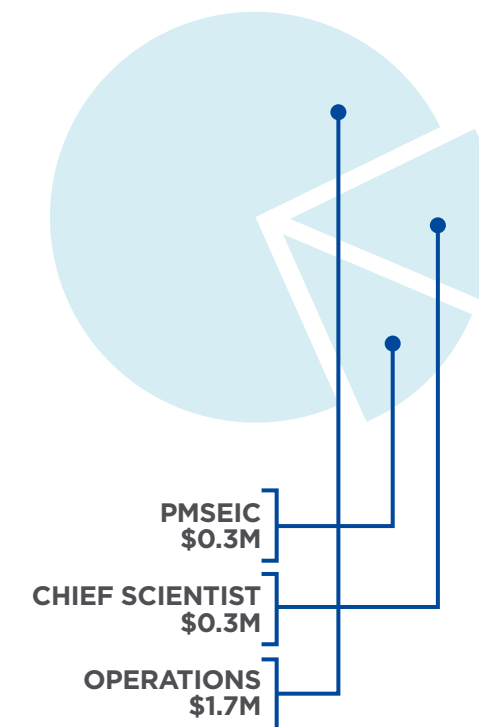
### ADMINISTRATION AND FINANCE

As a Division of the Department of Innovation, Industry, Science and Research in its own right, the Office requires financial and administrative support in order to manage its budgets and human resources and to ensure that the Office's corporate requirements are met.

### 2009/10 BUDGET

The annual budget for the Office of the Chief Scientist in the fiscal year 2009/10 was \$2.3 million. The budget is divided into three main categories.

FIGURE 1: OFFICE OF THE CHIEF SCIENTIST BUDGET



**PMSEIC** - The PMSEIC budget allocation supports the biannual Prime Minister's Science, Engineering and Innovation Council meetings, quarterly PMSEIC standing committee meetings and the production of PMSEIC reports through several expert working groups and administration.

**Chief Scientist** - The budget allocation covers a range of day to day activities for the Chief Scientist including travel, web site development, office supplies, conferences and seminars.

**Operations** - The operations budget covers the day to day operational running of the Office of the Chief Scientist, including staff salaries.

# MEET THE TEAM

Staff from the Office of the Chief Scientist have diverse backgrounds in terms of education and professional experience. The roles of some of the staff are highlighted below.



**ASHLEY STEWART**

Ashley holds a Bachelor of Biomedical Science (Honours) and is currently completing his PhD in Neuroscience. Originally beginning in the Department of Innovation, Industry, Science and Research as a graduate in 2009, he completed his final rotation with the Office of the Chief Scientist. Now a permanent Research Officer, he undertakes research and analysis to support the work of the Chief Scientist. This includes gathering information on climate change, Australia's maths and science education position, foresighting methodologies as well as preparing background briefings to support Professor Sackett's meetings with international and domestic science bodies and scientists.



**KATE GRIFFITHS**

Kate holds a Bachelor of Philosophy (Science) and completed her Honours in ecology and genetics in 2009. She is currently a graduate with the Department of Innovation, Industry, Science and Research, joining the Office of the Chief Scientist for her second rotation. Kate works in a number of supporting roles on events, logistics, media and communications in the Office of the Chief Scientist. She prepares briefs for Professor Sackett's international travel, researches material for her speeches and media events, and provides secretarial support to the Prime Minister's Science, Engineering and Innovation Council.



**ROS SMITH**

Ros holds a Bachelor of Commerce majoring in accounting, economics and management and is currently completing a Graduate Diploma in Applied Economics. Ros comes to the office with a strong financial background having worked in financial areas for a number of different Commonwealth agencies, including a posting to Port Moresby, Papua New Guinea as Business Manager for the former Overseas Property Group. As the manager for Office Administration within the OCS, Ros is responsible for financial management, human resource management and office administration.



**LINDSAY MORGAN**

Lindsay comes to the Office with a strong scientific background including a Bachelor of Science (Honours) majoring in biology and social science. She also spent the last five years working on an array of scientific projects for the Australian Government, including agricultural risk assessments, environmental reporting for businesses, researching and communicating new innovations to the public as a science communicator for Qwestacon, and working as the Australian Science & Innovation Officer for the British Foreign and Commonwealth office. Now in the Office of the Chief Scientist, Lindsay works as the logistics manager and is enthusiastic about strengthening the Chief Scientist's science diplomacy role both domestically and internationally.

# CHIEF SCIENTIST FOR AUSTRALIA

## FEEDBACK

As this is the first annual review produced by the Office of the Chief Scientist, we would appreciate your thoughts. Was it useful? Did you learn more about the Chief Scientist and the Office? Was it easy to read?

Please send any feedback to [projects@chiefscientist.gov.au](mailto:projects@chiefscientist.gov.au)



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