PART 2
ENTERPRISE PERFORMANCE

PART TWO: ENTERPRISE PERFORMANCE

Measuring our performance

CSIRO occupies an important place in Australia's National Innovation System, offering a unique combination of size, breadth and depth of capability, active research portfolio management and expertise in conducting large-scale, multidisciplinary, mission-directed research.

As the nation's largest research agency, our research addresses many of the complex interactions of human activity with natural and built environments, with a particular focus on tackling major challenges that matter to Australia's future. Over 90 per cent of CSIRO's resources are directed to the Government's National Research Priorities and our activities are strongly aligned with the National Innovation Priorities. CSIRO's activities and achievements are outlined in Parts Two and Three of this Annual Report, collectively providing evidence of our performance in four dimensions that are critical to CSIRO's success.[1] These dimensions are:

- **Impact**: Delivering results with relevance and impact in areas of importance for Australia
- **Science**: Performing high-quality science
- **Relationships**: Building and maintaining strong relationships with customers, partners, staff and other stakeholders
- **Resources**: Effective resourcing of CSIRO's activities.

Strategy implementation

In the 2010–11 Operational Plan, CSIRO's Executive Team identified five high priority areas of focus for executive action in this final year of the 2007–11 Strategy period.[2] Table 2.1 provides a summary of actions taken and progress achieved.

[1] *CSIRO Strategic Plan 2007–2011, (page 84):* www.csiro.au/resources/StratPlan07-11.html
[2] *CSIRO Operational Plan 2010–11, (page 7):* www.csiro.au/operational-plan

Table 2.1: Strategy implementation 2010–11

Strategic element and key focus area	Assessment of progress[1]	Summary of progress
Delivering on national challenges		
Further refine CSIRO's portfolio of research addressing national challenges and opportunities and contribute to the development of national research capacity.	●●●●●	A new Flagship Oversight Committee (FOC) is fully functional and strengthening the oversight of the National Research Flagships Program. The Australian National Audit Office (ANAO) completed an audit of the National Research Flagships Program and made two recommendations. The first was to improve financial reporting for Flagships and the second was to make better use of information collected from reviews. These recommendations were accepted and will be implemented through the enhanced FOC process. Collaborative demonstration projects in low-emission energy technologies are on track. The post-combustion capture pilot plant at Tarong Power Station and the solar tower research hub at Newcastle were launched this year. Development of new national research infrastructure facilities is progressing well. For example, the broadband network fibre has been laid between the Pawsey High-Performance Computing Centre in Perth and the Australian Square Kilometre Array Pathfinder in Murchison, Western Australia; the first online tools for *The Atlas of Living Australia* were released in late 2010; and the contract for the replacement Marine National Facility research vessel has been signed.

[1] *The strength of overall progress compared with the Operational Plan is rated on a scale from one to five in each focus area.*

Strategic element and key focus area	Assessment of progress	Summary of progress
Exploring new horizons		
Invest in building the capability and infrastructure required to deliver world-class responses to meet future needs.	●●●◖○	An assessment of our current scientific capability was completed. The results indicate the need to maintain the current level of capability investments. CSIRO submitted a four-year Capital Asset Plan to the Department of Finance and Deregulation and continues to participate in Departmental discussions on the review of depreciation funding. A Capital Assets Management Plan is still in development. Most of CSIRO's 'national footprint' initiatives, including site consolidations, are on schedule, although bad weather has delayed construction at some sites.[2] To ensure the optimum location of corporate groups on the Black Mountain site in Canberra, their relocation from Campbell has been postponed for two years.
Conducting science with impact		
Build internal management practices and external partnerships that enhance the prospects of effective translation of research into impact.	●●●●○	Significant progress has been achieved but ongoing attention is required to ensure improved practices and relationships are maintained over the long-term. A wide range of engagement initiatives with industry and government partners are progressing well, including Boeing; Abengoa Solar (Spain); Mitsubishi Heavy Industries (Japan); the National Oceanic and Atmospheric Administration; AusAID; The University of Queensland; General Electric; Bayer and Australia Pacific LNG. Internal management practices have been strengthened, with the introduction of new commercial standards to provide a basis for sound commercial relationships and to inform commercial decision-making processes. New methodologies to improve our capacity to deliver and demonstrate triple bottom line[3] impact are being developed. A new organisational structure has been introduced for our Communication function. New strategies for enabling the use of information technology in research are being introduced including testing of an electronic laboratory notebook.

[2] *Our national footprint map can be viewed in the Strategic Plan at: www.csiro.au/resources/CSIRO-Strategy-2011-2015.html*

[3] *The triple bottom line refers to economic, social and environmental impacts.*

Strategic element and key focus area	Assessment of progress	Summary of progress
Harnessing One-CSIRO		
Develop a clear and compelling strategy for 2011–15 and align CSIRO's operating and funding models to support strategy implementation at all levels.	●●●●○	A new Strategic Plan[4] has been approved by the CSIRO Board; some further work is required to fully align our operating and funding models to support the new strategy. The strategy embraces the Organisation's distinct role as a large-scale, mission-directed, multidisciplinary science and technology organisation, a connector of the National Innovation System, and a trusted science advisor on the big issues facing the nation. The strategy has been supported with a record $3 billion of appropriation funding for 2011–15. However, depreciation funding is still inadequate to support future capital needs and is under negotiation with the Department of Finance and Deregulation. A number of difficulties have been encountered in the process for translating identified science investment priorities for implementation through 2011–12 internal budget allocations and the process will be subjected to a thorough internal review.
Building our people, capability and scientific excellence		
Invest in developing engaged, focused and productive people working in a safe, sustainable and innovative environment.	●●●◖	The majority of actions planned have been completed or are in the final stages. A new Enterprise Agreement was approved by Fair Work Australia and came into operation on 7 July 2011. An enterprise wide induction, training and leadership development framework was developed. Around 3,300 training days were provided by our internal learning and development teams. Significant progress was made on embedding a culture of active safety and sustainability leadership in CSIRO. A new Health, Safety and Environment strategy, operating model and policies were introduced in the reporting period. An innovation maturity model was developed to benchmark CSIRO's capacity to innovate. The model will be launched in August and a baseline established in December 2011.

[4] *www.csiro.au/resources/CSIRO-Strategy-2011-2015.html*

Financial performance

In 2010–11, CSIRO delivered a surplus from ongoing operations of $12.5 million. However, our overall position was a deficit of $10.5 million due to a write down of $23.1 million in the value of our equity investments and assets[3], net of small gains from the sale of assets. Total revenue of $1,220 million included appropriation from government of $720 million and $500 million in revenue generated from other sources (representing an 8.9 per cent increase over prior year). Compared with 2009–10, the value of CSIRO's non-financial assets increased by $283 million including $227 million attributable to the revaluation of land and buildings and further increase relating to assets under construction.

CSIRO's financial performance in 2010–11 is summarised in Table 2.2, (by source of revenue) and Table 2.3 (by Program).

Table 2.2: CSIRO financial performance 2010–11, $m

Financial performance					
Revenue source	**2006–07**	**2007–08**	**2008–09**	**2009–10**	**2010–11**
Co-investment, consulting and services					
Australian private sector	58	68.2	76.3	71.8	81.6
Australian Governments	116	119.5	148.3	169.8	188.6
Rural industry R&D corporations	43.2	30.2	36.5	31.8	34.4
Cooperative Research Centres	39.8	38.2	40.3	42.3	34.8
Overseas entities and international	37.2	35.3	61	78.3	72.8
Work in progress / deferred revenue	-8.5	-1.4	-14.5	-13.6	5.9
Total co-investment, consulting and services	**285.7**	**290**	**347.9**	**380.4**	**418.1**
IP – royalty and licence revenues	30.6	81.7	229.6	46.7	29.2
Total research and services revenue	**316.3**	**371.7**	**577.5**	**427.1**	**447.3**
Other external revenue	44.5	41.3	40.1	32.1	47.9
Gain / (loss) on sale of assets	2.7	4.8	17.2		4.9
Other fair value gains and reversals	0.1	10.8	-	-	0.1
Total external revenue	**363.6**	**428.6**	**634.8**	**459.2**	**500.2**
Revenue from Government	610.1	663.2	668.1	704.9	720.4
Total revenue	**973.7**	**1,091.8**	**1,302.9**	**1,164.1**	**1,220.6**
Less: expenses	972.7	1,044.1	1,180.9	1,333.1	1,231.1
Operating result	**1.0**	**47.7**	**122.0**	**(169)**	**(10.5)**

[3] *Land and building were revalued as at 30 June 2011 by a panel of independent valuers. The primary valuer was CB Richard Ellis.*

Table 2.3: CSIRO – financial summary by PBS Program[4], 2010–11, $m

	Actual	Original PBS budget	Variance
Government revenue	720.4	720.9	0.5
External revenue	495.3	462.3	(33.0)
Other revenue	4.9	-	(4.9)
Total revenue	**1,220.6**	**1,183.2**	**(37.4)**
Program 1 – National Research Flagships	536.5	552.4	15.9
Program 2 – Core Research and Services	542.5	466.3	(76.2)
Program 3 – Science Outreach: Education and Scientific Publishing	35.3	31.8	(3.5)
Program 4 – National Research Infrastructure: Facilities and Collections	116.8	132.7	15.9
Total expenses	**1,231.1**	**1,183.2**	**(47.9)**

Intellectual property and equity portfolio

Intellectual property management and licensing

CSIRO manages intellectual property (IP) in a manner consistent with the *Statement of IP Principles for Australian Government Agencies*. This provides a robust framework for the effective identification, protection, ongoing management and exploitation of intellectual property. Recent highlights include:

CSIRO's fibre optic catheter technology is set to be adopted worldwide following the signing of two licences with international medical device companies. The fibre optic catheters will be used to diagnose and monitor gastrointestinal disorders once regulatory approval has been gained.

CSIRO's Reversible Addition and Fragmentation chain Transfer (RAFT) technology has opened up huge licensing opportunities with multi-national organisations keen to use RAFT in the development of smart materials (see case study on page 29).

Through CSIRO's Australian Growth Partnership (AGP) program, Biofiba Ltd received up to $2 million to fund the company's process for manufacturing shipping pallets made from CSIRO's revolutionary bio-composite timber (see page 36 for more details).

[4] *Portfolio Budget Statement Programs. For information on these programs see Part 3 of this report.*

New management processes implemented during 2010–11 have resulted in more strategic decision-making – including the abandonment of aged, costly intellectual property and an increase in strategic, outcome oriented filings. Table 2.4 outlines registrable forms of intellectual property rights pursued by CSIRO. CSIRO also generates and transfers non-registrable forms of intellectual property rights, such as software, that are not reflected in Table 2.4.

Table 2.4: CSIRO intellectual property by type

IP category[a]	Sub category	2006–07	2007–08	2008–09	2009–10	2010–11
Patents	Current PCT[b] applications	91	111	97	90	101
	Granted	2,067	1,933	1,625	1,630	1,631
	Live cases	3,922	3,787	3,710	3,379	3,370
Inventions	Patent families	734	741	743	712	709
	New	84	67	80	99	92
Trade marks	Australian	287	291	265	263	259
	Foreign	104	113	130	114	109
Plant breeder's rights	Australian	119	122	122	122	122
	Foreign	25	25	25	21	21
Registered designs	Australian	3	2	2	2	2
	Foreign	12	11	10	10	10

[a] IP categories are defined in the glossary on page 205.
[b] Patent Cooperation Treaty

Equity portfolio

The total value of CSIRO's equity portfolio at 30 June 2011 was $32.0 million compared to $32.6 million at 30 June 2010, a decrease of $0.6 million or 1.9 per cent in value. The major contributing factor was the decrease in value through an impairment of the shareholding in the unlisted company Arista Cereal Technologies Pty Ltd.

The portfolio transaction activity for 2010–11 is listed in Table 2.5. 2010–11 was a quiet year for the creation of companies. Seven companies managed to raise $44.3 million of new capital and CSIRO exited or partially exited five companies to realise $3.8 million cash to be reinvested into research.

In 2010–11, four companies were added to CSIRO's portfolio; one via a technology licensing agreement and three from AGP investments.

Table 2.5: Portfolio transaction activity, 2010–11

Activity	Number of companies	Value ($m)
Companies created	0	0
Change in structure (e.g. private to public)	1	1.4
Capital raisings	7	44.3
New CSIRO contributions	9	6.2
New companies	4	4.2
Exited (full or partial)	5	3.8
Wound-up	1	0

Research capability and scientific excellence

CSIRO invests in the development of high-quality scientific capabilities (including world-class researchers, research infrastructure and collaborative relationships) and assesses its performance through a program of independent science reviews and examination of five key performance indicators.

Science assessment reviews

The science assessment review program is a robust, rigorous and independent assessment process involving a review of each Division's research capabilities by independent experts from Australia and overseas. Divisional responses to the recommendations made by review panels are monitored by the CSIRO Executive and Board.

The first cycle of reviews, comprising 17 Divisions, was undertaken between 2005 and 2007. The second cycle of reviews began in late 2008. At the end of June 2011, 14 Divisions had been reviewed, including two during 2010–11. The remaining two Divisions will be reviewed in the second half of 2011. Panels usually consist of five scientific experts, three from overseas and two from Australia. The reviews help to establish the level of our research performance. With an international review comprised of world leading scientists in the appropriate areas, we gain a realistic appraisal of the performance of a Division as well as suggestions as to how the performance of research teams can be increased. In general the Review Panels found the Divisions to be of high-quality in their research, while noting that only some programs in any Division reach international leadership status.

CSIRO Marine and Atmospheric Research (CMAR) was reviewed in August 2010. Panel members were unanimous in their view that CMAR has a team of high-quality scientists producing excellent science focused on achieving their mission. They were impressed by the enthusiasm and commitment of all personnel. The Panel commented favourably on the formation of The Centre for Australian Weather and Climate Research in partnership with the Bureau of Meteorology, regarding this to be a highly significant achievement that

has already delivered major research benefits. The Panel noted that a Division as large and diverse as CMAR can be good at many things but it can only lead the world in a small number of these. It recommended that the Division should articulate the four or five research areas in which it would set out to lead the world.

CSIRO Mathematics, Informatics and Statistics (CMIS) was reviewed in October 2010. The Panel commented that the Division has made good progress since the first round review in 2006. It noted that scientific productivity and recognition had improved but that there is still further scope to lift recognition as a significant contributor to the mathematical sciences research community. The Panel made specific recommendations in regard to the Division's role in the leadership of CSIRO's bioinformatics capability, and in regard to the development of scientific capability in support of the services sector of the economy. The Panel further recommended that CMIS should build more strategic national and international collaborations to promote cutting-edge advancement in methods and techniques.

Key performance indicators

Table 2.6 provides a summary of progress against the five performance indicators relating to research capabilities identified in CSIRO's 2010–11 Operational Plan[5]. More detailed analyses and trend data follow.

Table 2.6: Performance indicators for research capability – summary

Indicator	Target	Result summary
Proportion of research capabilities rated as benchmark or strong.	Maintain or increase	There was a slight increase in the proportion of capabilities rated 'benchmark' or 'strong' in Round Two assessments compared with Round One.
Journal articles per research scientist.	1.5 articles per year	The number of articles is trending upwards and reached 1.27 per researcher in 2010.
Journal publications in top quartile journals.	40 per cent	Data not available.[1]
CSIRO citations per paper compared to world rate in each research field.	Greater than ten per cent above world rate	CSIRO is at least ten per cent above the world average citation rate in 13 of the 14 research fields in which it is in the top one per cent of global institutions.
Total citations per paper compared to world rate.	Greater than 40 per cent above the world rate	The average citation rate for CSIRO journal articles is 29 per cent above the world rate.

[1] *The bibliometric analysis required for this indicator was previously sourced from an external provider and is no longer available.*

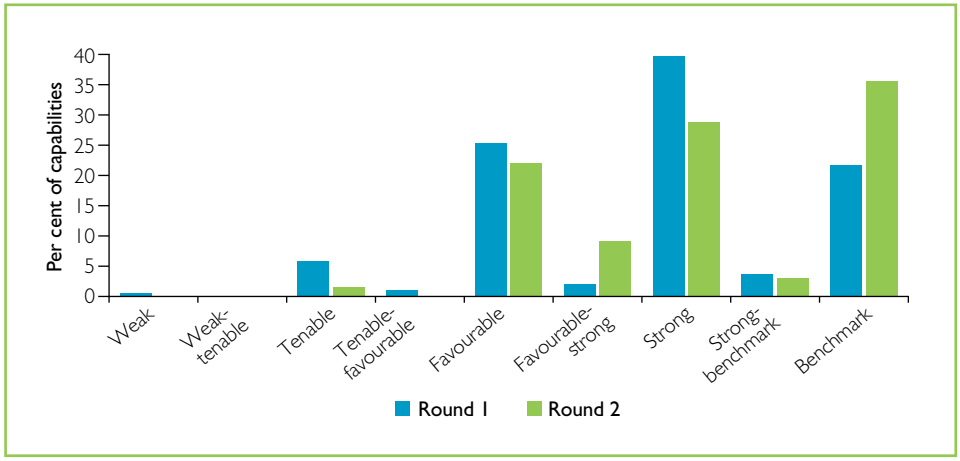
[5] *www.csiro.au/operational-plan.*

Proportion of research capabilities rated as benchmark or strong

As part of the science assessment review process (noted previously), the review panels provide a formal assessment of each Division's capabilities in two dimensions: industry/community and international research.

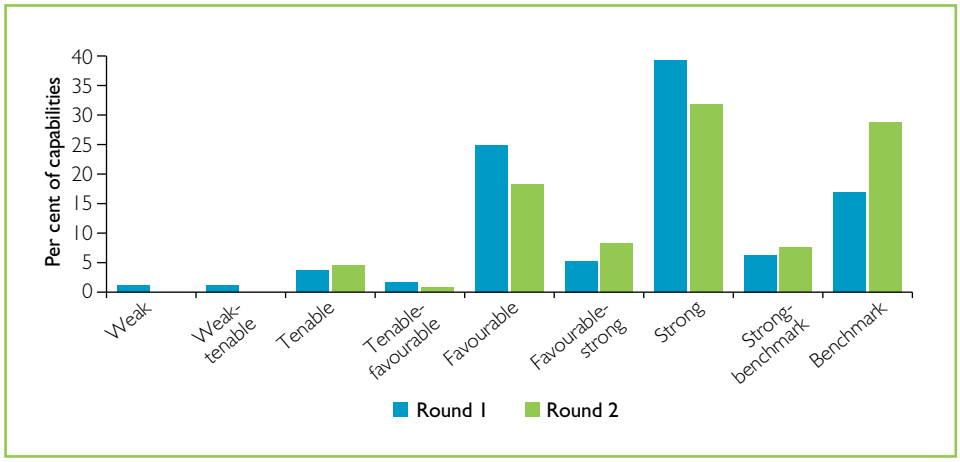
Interim results show some improvement in overall ratings compared with round one results (see Figures 2.1 and 2.2). The proportion of capabilities rated as strong or better increased from 65 to 67 per cent on the industry/community dimension and from 62 to 68 per cent on the international research dimension.

Figure 2.1: Ratings of Divisional capability groups – industry/community dimension



Source: CSIRO Divisional reviews

Figure 2.2: Ratings of Divisional capability groups – international research dimension

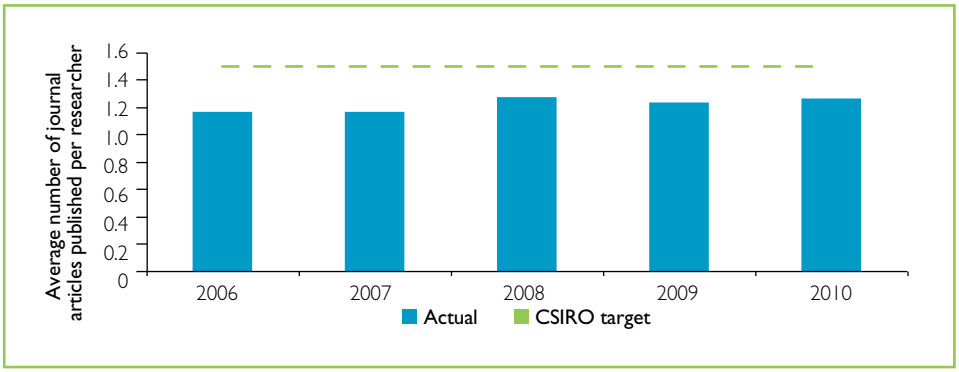


Source: CSIRO Divisional reviews

Journal articles per researcher

The number of journal articles per researcher has been trending upwards over the last ten years. Data for the most recent five years are shown in Figure 2.3.

Figure 2.3: Journal articles per researcher



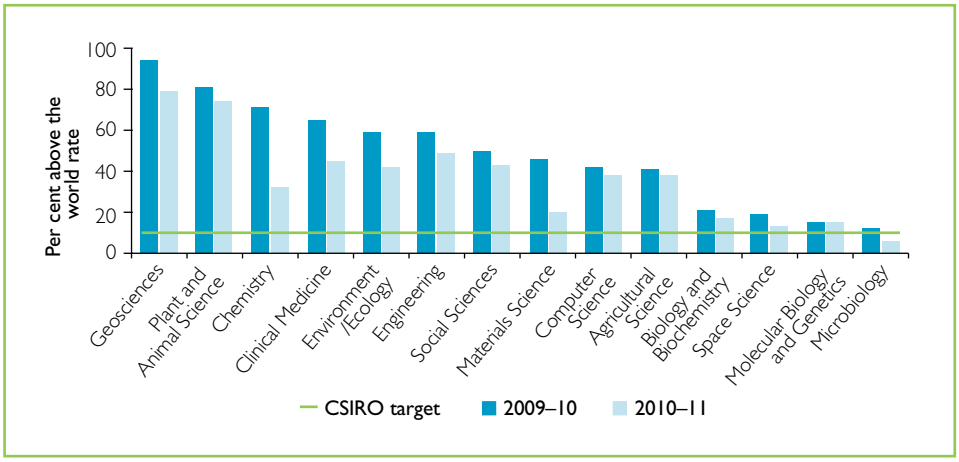
Source: CSIRO

Citations per paper in each research field

A metric commonly used to assess the contribution of research institutions in a particular field of research is the total number of citations received by its publications in the field. On this basis, as at May 2011, CSIRO ranks in the top one per cent of scientific institutions in 14 out of 22 research fields. These 14 fields account for approximately 94 per cent of all CSIRO's publications. The citation rate for CSIRO's publications is higher than the world average citation rate in all 14 fields – and at least ten per cent above the world average in all but one of these fields (see Figure 2.4)[6].

[6] *Source: Thomson Reuters/ISI Essential Science Indicators. Data updated as at 1 May 2011 to cover a ten-year and two month period, 1 January 2001 to 28 February 2011.*

Figure 2.4: CSIRO citation rates compared with world average citation rates by field



Source: Thomson Reuters/ISI Essential Science Indicators

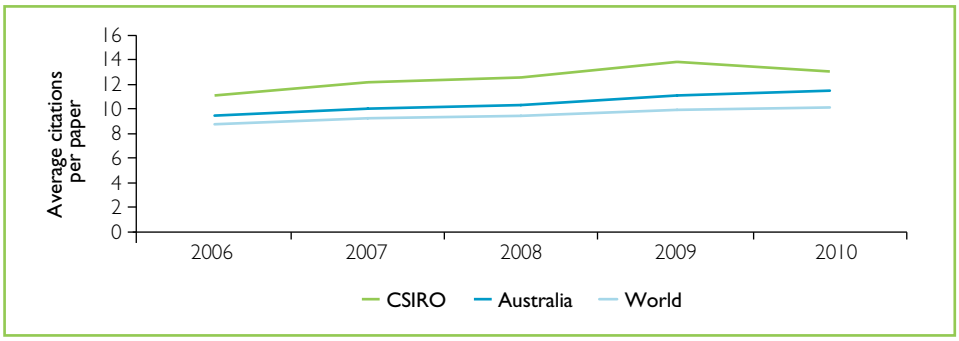
Total citations per paper compared to world rate

CSIRO's overall citation rate of 13.09 citations per paper is 29 per cent above the world rate of 10.18 (as at May 2011). This compares with a margin of 38 per cent in 2010 and a margin of 19 per cent recorded in 2004. CSIRO citations per paper decreased by five per cent, whereas the Australian average increased by three per cent and the world average increased by two per cent (see Figure 2.5).

The decrease in CSIRO's citation rate is partly due to a 12 per cent increase in the number of CSIRO publications recorded in the Essential Science Indicators database as at May 2011, compared with May 2010. Papers typically receive few citations in the year of publication, so a sudden influx of papers could reduce the citations per paper rate. Another possibility is that some highly cited CSIRO papers from ten years ago have dropped out of the calculation.

While a single data point does not indicate a downward trend, we will monitor the situation closely. Understanding and improving our science health is a key focus for the 2011–15 strategy.

Figure 2.5: Average citations per paper



Source: Thomson Reuters/ISI Essential Science Indicators

Collaboration and partnering

University collaboration

CSIRO has extensive collaborative relationships with universities in Australia and internationally. CSIRO is a key player in the training of future researchers (see Table 3.5, page 62) and provides a high-quality, applied-research environment for building Australia's scientific capability and capacity.

Approximately 40 per cent of CSIRO's staff are located on, or directly adjacent to, university campuses. In collaboration with university and industry partners, CSIRO is developing a number of innovation precincts of global scale. These precincts will attract overseas partners and investment, will ensure efficient use of science infrastructure, and will provide the environment to tackle some of the world's most complex challenges.

Through the Flagship Collaboration Fund, CSIRO committed to the investment of $17.2 million in research conducted by more than 26 universities.

Some examples of collaborations during 2010–11 include:

- An array of technical equipment has been commissioned to observe the physical properties of the nation's surrounding deepwater oceans. The array, funded by the Integrated Marine Observing System, will be shared by CSIRO, the University of Western Australia, University of Tasmania, James Cook University and Curtin University and other research institutes.
- CSIRO and the University of Western Australia opened a joint laboratory to develop legume crops with improved resistance to disease.
- CSIRO and the Chinese Academy of Sciences reached an agreement to increase collaboration through projects on sustainable water, agriculture and crop breeding; climate science and remote sensing; and nanotechnology and new materials for energy.

Cooperative Research Centres

CSIRO remains the largest single participant in the Cooperative Research Centre (CRC) program. Throughout the life of the program, CSIRO has been a participant in 134 of the 190 CRCs that have existed, (rounds 1–13 inclusive). In 2010–11 CSIRO's direct contribution to CRCs was $34.8 million.

CSIRO is a participant in three of the four Round 13 CRCs that were announced to receive funding in December 2010: the High Integrity Australian Pork CRC, the Contamination Assessment and Remediation of the Environment CRC and the CRC for Mental Health.

The opening of Round 14 was announced in December 2010, with proposals to the Department of Innovation, Industry, Science and Research submitted on 2 July 2011. CSIRO has participated in 11 CRC bid submissions, of which nine are extensions to existing CRCs and two are new.

CSIRO engages in CRCs to build critical mass in research ventures which tackle clearly articulated major challenges for end users and Australia.

Customer engagement

CSIRO has reaffirmed its commitment to its customers and partners with the introduction of a strategic pillar 'Deep Collaboration and Connection' in CSIRO's new 2011–15 Strategy.

Specific strategies were developed for each of CSIRO's key customer segments. A four-year forecast was produced for these segments and major clients through the introduction of a new commercial planning component into CSIRO's existing annual Science Investment Process. In terms of Section 311A of the *Commonwealth Electoral Act 1918*, no advertising campaigns were undertaken in 2010–11.

CSIRO has continued to establish large research alliances with key partners. CSIRO secured a landmark $20 million, five-year research alliance with General Electric in September 2010, solidifying a growing portfolio of long-term alliances with clients including Orica Ltd, AusAID, Centrelink, the Bureau of Meteorology, the Queensland Government, Boeing and Bayer.

CSIRO also continued to engage with other major clients including the Department of Agriculture, Fisheries and Forestry, the Department of the Environment, Water, Heritage and the Arts, the Grains Research and Development Corporation, as well as major multinational organisations. During the financial year, the total value of projects each worth more than $7 million increased from $316.5 million to $539.5 million, evidencing growing maturity of our business development and commercial activities and relationships with clients.

Flagship Collaboration Fund

The Flagship Collaboration Fund (FCF) has engaged with over 70 different external institutions since 2005, with international partners increasing steadily. The engagement spans 27 Clusters, over 100 Projects, 30 visiting fellowships and more than 140 postgraduate scholarships.

Recommendations from the first external review of the FCF in 2010 were implemented during 2010–11 as operational improvements, including development of the first formal performance measures for the Fund. See page 27 for information on investment of the Fund.

Government engagement

A critical part of CSIRO's broader relationship with Government is its role as a trusted advisor, providing relevant scientific and technical input and advice to decision-makers. Key activities during 2010–11 included:

- Membership on seven of the Australian Government's eight Industry Innovation Councils and membership on a range of other government boards and advisory bodies, for organisations including Commercialisation Australia and the Office of the Chief Scientist.
- Regular meetings with Ministers and parliamentarians and with senior staff from relevant government departments to provide scientific information and advice to inform policy development and program implementation and evaluation. Examples include ongoing engagement on issues of sustainability and carbon management, as well as on development of the National Plan for environmental information.

- CSIRO made eight submissions to Federal parliamentary inquiries and CSIRO officers attended six hearings to provide further evidence to these inquiries.
- CSIRO held three *Science for Breakfast* briefings at Parliament House and in parallel with these also provided targeted briefings for departments and individual parliamentarians.
- CSIRO hosted a number of visits by Ministers and other Parliamentarians to our sites.

International engagement

CSIRO continues to strengthen existing research relationships and forge new links globally. During the reporting year, the Organisation participated in over 800 international activities, ranging from collaborative research to consulting and the supervision of scientists from as many as 60 countries. The value of CSIRO's international transactions exceeded $72 million.

CSIRO's single most important international partner country continues to be the USA. CSIRO's involvement with China continues to strengthen, with a significant increase in the number of joint publications during 2010–11. Ongoing development of strategic relationships with emerging nations (Brazil, Chile and South Korea) is of significant importance as is CSIRO's work in 'Innovation for Development' through its partnership with the Global Research Alliance, AusAID and the Australian Centre for International Agricultural Research (ACIAR).

Highlights during 2010–11 include:

- CSIRO and AusAID signed a Strategic Partnership Agreement that sets out the framework for ongoing strategic cooperation between the organisations.
- The CSIRO–AusAID Africa Food Security Initiative was established. The focus of this $50 million, three-to-four year initiative is to foster integrated agricultural research for development in East, West and Central Africa, and to develop capacity building and research activities to improve animal health and the nutritional quality of foods.
- CSIRO hosted 42 PhD students from China under a Memorandum of Understanding with the Chinese Ministry of Education/China Scholarship Council.
- Orders for CSIRO's air cargo equipment scanning technology developed under a joint venture between CSIRO and Chinese equipment manufacturer Nuctec were placed.
- CSIRO's engagement with the Chinese Academy of Sciences (CAS) continued to grow with the commencement of five workshops and three joint projects in the four CAS-CSIRO priority areas for collaboration: health, materials, climate change and remote sensing, and agriculture.
- An MoU with the National Oceanic and Atmospheric Administration (NOAA) was signed in February 2010. The inaugural joint CSIRO-NOAA meetings followed in June 2010.
- The 11th Australia – European Union Joint Science and Technology Cooperation Committee (JSTCC) meetings were held from 7–9 June 2010. CSIRO hosted one of the six JSTCC thematic workshops in Canberra on Biotechnology, Agriculture and Food as part of the current 'Knowledge Based Bioeconomy'.
- Continuation of CSIRO's work within the Global Research Alliance (GRA). CSIRO and its fellow GRA members are currently collaborating with the World Bank in Vietnam to develop an 'Inclusive Innovation' framework for the country.

Indigenous Engagement Strategy

2010–11 marked the commencement of Phase 2 implementation of CSIRO's Indigenous Engagement Strategy. The four pillars of the strategy are Indigenous Employment; Cultural Learning and Development; Science and Research Opportunities; and Outreach Education. The Office of Indigenous Engagement (OIE) is developing a sharper focus on two key pillars by identifying more Indigenous employment opportunities and building on CSIRO's ability to engage more effectively with Indigenous communities. The aim is to deliver science through more targeted cultural learning and development activities.

Indigenous employment: A 2.7 per cent Indigenous employment benchmark has been set for all Australian Public Service Agencies. CSIRO aims to achieve this target by 2015. During 2010–11, six Indigenous cadets successfully progressed through their undergraduate science studies, making a valuable contribution during their 12-week work placements. A number of cadets completed their undergraduate science degrees and are now undertaking an Honours or Masters. Two cadets commenced PhD programs. One cadet completed a PhD and is now CSIRO's first Indigenous participant in a postdoctorate research program. Towards the end of 2010, CSIRO initiated an Indigenous Student Internship Program, recruiting three Indigenous interns as part of a new Indigenous employment initiative. All three candidates completed their internships and gained valuable experience in the business development of a large science organisation.

Cultural learning and development: Three events were held to promote a better understanding of how to engage more effectively with Indigenous Australians in relation to the science we deliver.

An inaugural *'Indigenous Science Speakers Forum'* was held at the CSIRO Discovery Centre in Canberra during the National Aboriginal Islander Day Observance Committee (NAIDOC) week. Mr Bradley Moggridge, an Indigenous CSIRO water researcher, provided the keynote address.

The Chief Executive launched CSIRO's protocols for conducting a 'Welcome to Country' and 'Acknowledgement of Country'. This was coupled with a Welcome to Country ceremony provided by Ms Matilda House, an elder of the Ngunnawal and Ngambri Nations. Several other ceremonies have since been conducted by science leaders.

The Indigenous naming of CSIRO's Ngara Wireless Technology was conducted in recognition of the Dharuk people, the traditional custodians of the land in which the technology was developed. The name 'Ngara', which means to *'listen'* to *'hear'* to *'think',* symbolises the true intent of an effective information network.

During 2010–11, the OIE developed a multi-tiered Cultural Learning and Development Plan to assist CSIRO engage with Indigenous Australians in a culturally sensitive and efficient way.

Science and research opportunities: Science and research that has a strong Indigenous focus is emphasised in the Ecosystem Sciences Division, which is addressing issues associated with Indigenous water access and allocation, climate change impacts, carbon sequestration and market opportunities.

A unique partnership has been forged between CSIRO and the Wajarri Yamatji people of Western Australia through a negotiated Indigenous Land Use Agreement. The agreement will make astronomy available to all Australians and will provide

Dr Megan Clark (Chief Executive, CSIRO) received a message stick wrapped in a possum skin from Ms Matilda House, an Elder of the Ngambri-Ngunnuwal Nations, the traditional custodians of the Canberra region. Credit: Cris Kennedy

benefits through education, enterprise and employment opportunities to the Wajarri Yamatji people.

Outreach education opportunities: During 2010–11, CSIRO continued its development with the Nudgee Beach Environmental Education Centre of an Indigenous Science Education Pathway pilot project aimed at increasing the participation of Indigenous students taking up science. It is anticipated that 14 high school students will graduate later in 2011. CSIRO's Darwin Laboratory continues to deliver Indigenous Education activities through the Jack Cusack Memorial Science Scholarship, which provides opportunities for Indigenous students from Kormilda College to work side-by-side with scientists on research projects. The Darwin Laboratory also has a strategic partnership with the Tiwi College to raise awareness of science as an attractive career path, and to assist with science education. In 2010, the 'Literacy through Science' program was established, focusing on ecology and environmental monitoring. In 2011, CSIRO will play a key role in helping deliver formal vocational and educational training in conservation and land management to Tiwi College students.

Awards and honours

Outstanding performance in research is recognised by various international and national award schemes. Here are just a few examples of awards and honours granted in 2010–11 that demonstrate our effectiveness in research and its application in industry and the community.

2011 Australian of the Year

Mr Simon McKeon (CSIRO Board Chairman) was named 2011 Australian of the Year. This award celebrates eminent Australians by profiling leading citizens who are role models for all Australians. Winners are those who inspire through their achievements, and who challenge others to make their own contribution to creating a better Australia.

Order of Australia

Member (AM)

Dr Penny Olsen (formerly, Ecosystem Sciences) for service to the conservation sciences as an author and researcher, and through the study and documentation of Australian bird species and their history.

Dr Anthony Smith (Marine and Atmospheric Research) for service to marine science through research and development of ecosystem based fisheries management, particularly the implementation of harvest strategies and policy governing sustainable practices.

Australian Museum Eureka Prizes 2010

Dr Amanda Barnard (Materials Science and Engineering) was awarded the *Research and Innovation Eureka Prize* for predicting properties of nanoparticles in sunscreens.

Dr Drewe Ferguson (Livestock Industries) and **Dr Robyn Warner** (Food and Nutritional Sciences) as part of the interdisciplinary Meat Standards Australia Team won the *Research for an Interdisciplinary Team Eureka Prize* for co-developing the world's first 'paddock-to-plate meat grading system'.

CSIRO Chairman's Medal

The Chairman's Medal honours the most exceptional research in CSIRO and is awarded to the scientist or team whose research is of national or international importance in advancing scientific knowledge, technology application or commercialisation.

The winners of the *2010 Chairman's Medal* were **Dr Bill Barendse, Dr Brian Dalrymple, Dr James Kijas** and **Dr Ross Tellam** (team leaders) and the **Livestock Genomics Team.** The team played key roles in developing and leading two international consortia that managed the cattle and sheep genome projects. They identified the urgent need to decode these livestock genomes to progress animal sciences and improve industry productivity.

Further information on CSIRO Awards can be found at: www.csiro.au/science/CSIRO-Chairmans-Medal-Recipients.html

Winners of the Chairman's Medal: the Livestock Genomics Team (left to right, bottom row) Dr James Kijas, Dr Bill Barendse, Dr Megan Clark (Chief Executive, CSIRO), Senator, the Hon Kim Carr (Minister for Innovation, Industry, Science and Research), Dr Ross Tellam, Dr Brian Dalrymple, Mr Simon McKeon (Chairman, CSIRO Board). Middle row: Mr Russell McCullock, Mr Rowan Bunch, Mr Wes Barris, Mr Warren Sim, Mr Nick Corbett. Back row: Mr Laercio Porto Neto, Mr Blair Harrison, Dr Rachel Hawken, Mr Paul Williams, Mr Sean McWilliam. Credit: Leo Farrell, Rokeby Studios

The CSIRO Medal for Lifetime Achievement

The CSIRO Medal for Lifetime Achievement is awarded to individuals who have a record of sustained and meritorious achievement over a prolonged period of CSIRO service.

The 2010 winner was **Dr Ta-Yan Leong** (International) for contributions to CSIRO's international group for 25 years, supporting the full range of CSIRO's international activities, building deep, trusting and long-term productive relationships with overseas partners which have benefitted CSIRO and Australia.

Sir Ian McLennan Achievement for Industry Award

This award was established by the former CSIRO Advisory Council in 1985 to recognise outstanding contributions by CSIRO scientists to Australian industry.

The 2010 winner was **Dr Wojciech 'Voytek' Gutowski** (Materials Science and Engineering) for his contribution to industry through breakthrough eco-sustainable technologies that have delivered worldwide industrial, economic and environmental impact.

Winner of the CSIRO Lifetime Achievement Medal, Dr Ta-Yan Leong. Credit: Leo Farrell, Rokeby Studios

Fellows of Societies

Dr Jenny Bennett (**CSIRO** PUBLISHING) was appointed a Fellow of *The Royal Australian Chemical Institute.*

Dr John Church (Marine and Atmospheric Research), **Dr Mike McLaughlin** (Land and Water) and **Dr Michael Raupach** (Marine and Atmospheric Research) were appointed as CSIRO Fellows.

Dr Rob Fitzpatrick (Land and Water) was appointed a Fellow of the *Soil Science Society of America.*

Dr Matthew Morell (Plant Industry), **Dr San Thang** (Materials Science and Engineering) and **Dr Linfa Wang** (Livestock Industries) were elected as Fellows of the *Australian Academy of Technological Sciences and Engineering.*

Dr Colin Ward (retired, Molecular and Health Technologies) was elected a Fellow of the *Australian Academy of Science.*