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8 April 2005

Kathleen Dermody, Committee Secretary  
Senate Foreign Affairs, Defence and Trade Committee  
Department of the Senate  
Parliament House  
CANBERRA ACT 2600

Dear Ms Dermody,

**RE: Inquiry into Australia's relations with China**

Please find enclosed a submission from CSIRO to the above inquiry. I would like to take this opportunity to thank you for allowing us to provide you with our submission after the official deadline.

We would be more than happy to provide further information, either in the form of written material or by appearance at hearings of your Committee if they take place.

Yours sincerely,

A handwritten signature in black ink, appearing to be "Mara Bun", written in a cursive style.

Ms Mara Bun,  
Director, CSIRO Business Development

# **Inquiry into Australia's relationship with China**

Senate Foreign Affairs, Defence and Trade  
References Committee

**CSIRO submission**  
**April 2005**

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## Structure

CSIRO welcomes the opportunity to provide a submission to the Inquiry into Australia's relationships with China. Although scientific relationships are not included in the Terms of Reference, they could nevertheless contribute to the overall economic and political relationship between Australia and China. The submission that follows outlines CSIRO's current engagement with China and identifies future opportunities which could be part of the political and economic relationship process.

## Terms of Reference Relevant Section

Terms of Reference	Relevant Section
(a) Australia's economic relationship with China with particular reference to: v. Existing strengths of Australian business in China and the scope for improvement through assistance via Commonwealth agencies and Australian Government programs; vi. Opportunities for strengthening and deepening commercial links with China in key export sectors;	<b>Sections 2 and 3</b>
(b) Australia's political relationship with China with particular reference to: ii. Opportunities for strengthening the deepening political, social and cultural links between Australia and China	<b>Section 1</b>

## Summary

CSIRO and China have enjoyed a rich and mutually beneficial relationship over the last 25 years. This relationship has delivered not only scientific but also trade, cultural and social benefits to both countries and continues to flourish with every new collaboration.

CSIRO's first official interaction with China started in late 1979 and since then, has expanded rapidly to include a broad and wide range of collaboration:

- 52 projects funded by ACIAR in China since 1983
- 13 projects funded by AusAID in China since 1981
- 63 other projects in 2003/2004

Recent interactions led to the following scientific outcomes:

- 47 Joint scientific publications in 2004; and
- 41 Joint scientific publications in 2003.

CSIRO's interactions in China have helped deliver the following benefits:

- strengthened China's grain handling system – especially in the fumigation and storage of grains – facilitating the export of Australian wheat and barley to China;
- established China's eucalyptus research centre – leading to the planting of Australian tree species like acacia and eucalyptus in broad area of southern and central China – facilitating the sale of Australian tree seeds and associated services and equipments;
- established the Radio telescope in Urumqi – by designing and manufacturing the receiver, leading to joint observation of the universe;
- a more efficient coal mining practice in both countries through collaboration in the Longwall caving mining technology;
- a better understanding of the management of water and soil resources in very similar conditions; and
- more efficient research in agriculture and radio astronomy due to the complementarity of northern and southern atmosphere locations;

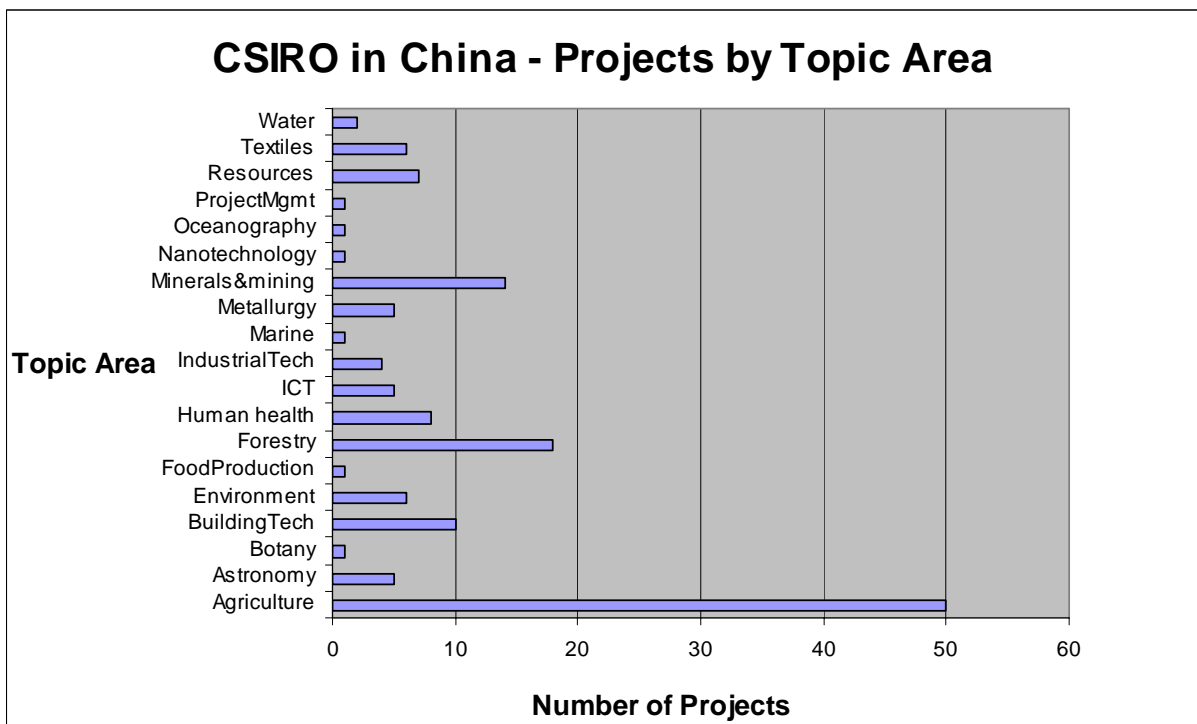
CSIRO scientists gain much social and cultural experience through these long term interactions. There are 322 CSIRO employees (about 5%) who speak Mandarin or a Chinese dialect. Out of the 322 staff members, 248 are born in China. China could become an important source of researchers for Australia in the years to come.

As the scientific relationship becomes more mature, there are opportunities to use this relationship to strengthen the economic relationship between the two countries. The CSIRO brand is very well regarded in China. Feedback from CSIRO's corporate and government partners suggests that the level of trust and acceptance afforded to CSIRO in China is high. This factor could facilitate the advancement of Australian national interests across multiple industry and community sectors.

## 1. Current scientific collaboration with China

China's open door policy in the late 1970s led to contacts between CSIRO and the Chinese Academy of Sciences (CAS) and other Chinese agencies in 1979. CSIRO signed a Memorandum of Understanding on scientific collaboration and exchanges with the CAS in 1984, leading to wide ranging collaboration and exchanges including the following:

- 52 projects funded by ACIAR in China since 1983;
- 13 projects funded by AusAID in China since 1981;
- 63 other projects in 2003/2004.

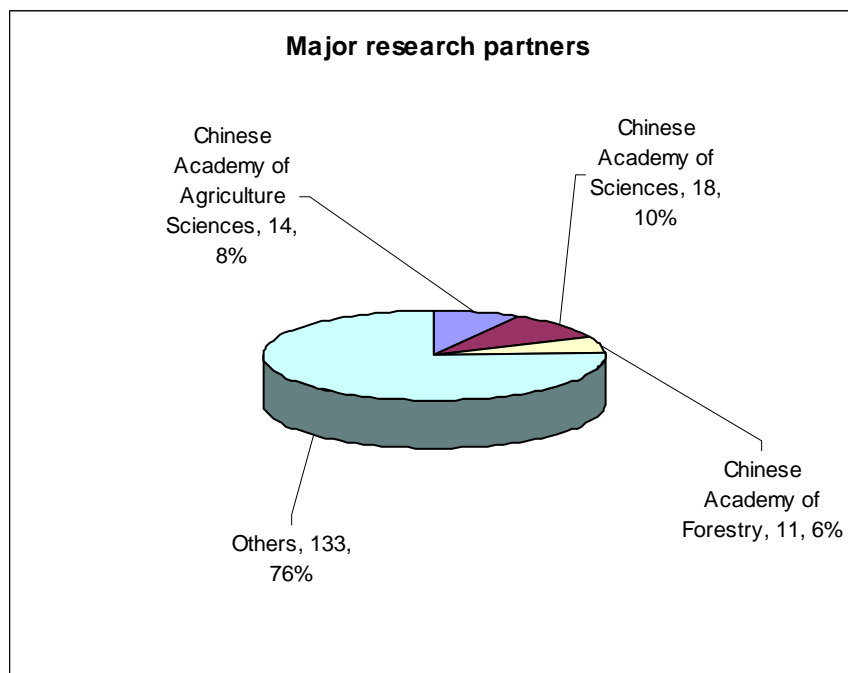


[Note: the number of projects is an indication only as the collection of data over the years was not complete.]

The ACIAR (Australian Centre for International Agriculture Research) and AusAID funded projects are all part of the Australian government's effort in strengthening political and economic relationships with China.

Over \$24 million has been invested in joint research projects between CSIRO and over 170 Chinese organizations since the 1980s. Projects have spanned China's vast geography from Inner Mongolia to South China and from western China to Nanjing and Shanghai.

Along the way strong relationships have formed between CSIRO and collaborators, including the Chinese Academy of Sciences, the Chinese Academy of Agricultural Sciences and the Chinese Academy of Forestry, leading to further collaborations. The Chinese Academy of Sciences alone has collaborated with CSIRO on 18 projects.



*[Note: indicates major partners, but is not fully comprehensive]*

### **Examples of collaboration**

- The Australian Development Assistant Bureau (ADAB, now renamed as AusAID) and later DITAC (the Commonwealth Department of Industry, Technology and Commerce) funded the project “Asia Pacific Metrology Program” from 1981 to 2001 involved the then CSIRO National Measurement Laboratory and the relevant national metrology agencies in China. The project helped to harmonize the industrial measurement standards and thus reduced the barrier to trade between Australia and China.
- A leading CSIRO viral disease expert - Dr Laurie Gleeson from the Australian Animal Health Laboratory in Geelong – is helping to coordinate UN's Food and Agricultural Organization (FAO)'s international investigation into the roles animals might play in spreading the deadly SARS virus which affected China in 2003. The collaboration with China in the diagnosis of the virus helps Australia to strengthen its own preparedness for this particular virus and possibly other diseases.

### **Importance of China to CSIRO**

China is an important partner for CSIRO because of the following features:

- complementarity of northern and southern atmosphere locations;
- similarity in terms of geographic and climatic conditions;
- favourable condition for CSIRO to test some of its technologies in China; and
- both countries have a diverse range of biodiversity, thus it is advantageous to expand the germplasm and gene pool.

Because of these features, it is more efficient for CSIRO to collaborate with China in agriculture research (double the number of cropping seasons in one year); astronomy (north – south location); mineral exploration; water and land conservation issues.

Furthermore, there are more and more scientist-to-scientist contacts between CSIRO and its Chinese counterparts. The increased number of Chinese graduates from Australian universities has also expanded the possible source for CSIRO employees. As at the end of 2004, there are 322 CSIRO employees (about 5%) who speak Mandarin or a Chinese dialect. Out of the 322 staff members, 248 are born in China.

## **2. Benefits to Australia**

### *2.1 Scientific benefits*

Recent interactions led to the following scientific outcomes:

- 47 Joint scientific publications in 2004; and
- 41 Joint scientific publications in 2003.

An analysis of the 47 joint publications in 2004 reveals that the collaborations are mostly in the following disciplines:

- geology – computer modelling of structures;
- crop science – including gene technology, taxonomy, crop yields etc;
- radio astronomy;
- building technologies; and
- natural resources management.

An example of scientific collaboration is the role played by CSIRO's Australian Telescope National Facility (ATNF) in establishing the radio telescope in Urumqi – by designing and manufacturing the receiver, leading to joint observation of the universe.

### *2.2 Economic benefits*

Collaborations in the last 25 years have led to the following economic benefits, some are not directly measurable, but important:

- the export of dry land farming technologies, services and equipments;
- the export of grains and related services through a better regulatory system, and a better management of grain handling system in China, especially in the fumigation and storage of grains; similarly for Australian export of timber products to China;
- the export of membrane and water treatment technologies, services and equipments;
- better understanding of exotic diseases (such as foot and mouth disease, avian virus, SARS etc);
- the export of mineral ores to China through a series of projects which strengthened China's capability to handle and refine these ores;
- Australian mines are in the process of introducing technology that will improve productivity, safety and environmental outcomes from technology originally developed in China, such as the Longwall mining

technology, with the cooperation of Chinese companies and research agencies. Similarly, there are Australian mining practice and machinery being exported to benefit the Chinese industry with support from CSIRO and other Australian groups;

- the export of Australian technologies, services and analytical instruments in the minerals area through a series of projects;
- a better understanding of the management of water and soil resources in very similar conditions; and
- a better understanding of mineral ore formation processes which may lead to the discovery of new ore bodies..

### **2.3 Political benefits**

CSIRO scientists are being recognised in China for their contribution to the bilateral scientific relationship, which has the potential to impact on the political relationship. Examples of those honoured include:

- Professor Alison Ord, Chief Research Scientist, CSIRO Exploration and Mining, was awarded the title of Honorary Professor with the Changsha Institute of Geotectonics, Chinese Academy of Sciences in 1999, in recognition of her long term contribution to research in geodynamics, numerical modelling theory and application.
- CSIRO scientist, Mr Steve Midgley, honoured by the Municipal Government of Zhanjiang City, Guangdong Province, China as an Honorary Citizen in recognition for work with the China Eucalypt Research Centre on fostering eucalypt-based industry in 2001;
- CSIRO scientist, Dr Roger Arnold, received the International Science and Technology Cooperation Award from the Hunan Provincial Government for outstanding collaborative research and development of cold tolerant eucalypts for establishment of fast growing high yielding hardwood plantations in Hunan Province in 2002;
- CSIRO scientist, Dr Roger Arnold received the 'Jin Xiu Qiu' Award in September 2003 from the Guangxi Provincial Government for outstanding collaborative research and development work on forest plantations for cooler areas of northern areas of Guangxi;
- Dr Peter Manins (CSIRO Atmospheric Research) invited in 2004 to be expert member of Advisory Group for World Weather Research Program for a Beijing 2008 Forecast Demonstration project; and
- Dr Peter Hudson (CSIRO Health Sciences and Nutrition) one of the organizers of the Second China International Symposium on Antibody Engineering scheduled for October 2005 in Beijing.



### **3. Future opportunities for CSIRO in China**

China could become an important source of potential science talent for CSIRO. Recent mandatory retirement and drastic staffing cutbacks in Chinese research organisations have opened the door for younger, better-educated scientists to move into senior research and management positions. At most CAS (Chinese Academy of Sciences) organisations, for example, the majority of their staff is less than 45 years of age. A natural result has been increased output. China ranked 12<sup>th</sup> worldwide in major international scientific publications in 1992, but reached 8<sup>th</sup> by 1999. It ranked 17<sup>th</sup> in the Scientific Citations Index (SCI) in 1992, but by 2000 had reached 8<sup>th</sup> place for the number of papers cited. This growing pool of recognised talent can, over time, be recruited to build on the excellent contribution by CSIRO's many scientists of Chinese origin.

CSIRO's strategy is to expand the sphere of interaction in China over a medium to long term timeframe. Building on the success of a high level CSIRO delegation visit to the Chinese Ministry of Education (MoE) and the Ministry of Science & Technology (MoST), CSIRO is currently negotiating a Memorandum of Understanding (MoU) of collaboration with MoST, after having signed a MoU with MoE in March 2005. This would give CSIRO more access to opportunities of collaboration with Chinese universities, key research laboratories and national research agencies.

At the same time, CSIRO is also working with Australian companies to expand their involvement in China.

### **4. Conclusions**

Building on the strong foundation of 25 years of collaboration with its counterparts in China, CSIRO is in a very good position to project itself as a trusted and recognised brand in China, thereby benefiting both countries not only in scientific and technological areas, but also in the political and economical arena.