

# Report 81

## **Treaties tabled on 8 August 2006 (2)**

Agreement between the Government of Australia and the Government of the People's Republic of China on the Transfer of Nuclear Material (Canberra, 3 April 2006)

Agreement between the Government of Australia and the Government of the People's Republic of China for Cooperation in the Peaceful Uses of Nuclear Energy (Canberra, 3 April 2006)

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ISBN 0 642 78862 6 (printed version)

ISBN 0 642 78863 4 (HTML version)



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## Foreword

The Joint Standing Committee on Treaties was established to review all treaty actions tabled in Parliament, assessing whether these treaties are in Australia's national interest and recommending whether the Australian Government should undertake binding treaty action or ratification of these treaties.

In this report, the Committee has reviewed two topical treaties:

- *Agreement between the Government of Australia and the Government of the People's Republic of China on the Transfer of Nuclear Material* (Canberra, 3 April 2006)
- *Agreement between the Government of Australia and the Government of the People's Republic of China for Cooperation in the Peaceful Uses of Nuclear Energy* (Canberra, 3 April 2006)

The Committee advertised its inquiry in the national press, on its website and wrote to uranium and mining companies and their industry representatives, State and Territory Governments, Parliaments, indigenous land councils and communities and individuals with an interest in the treaties. The Committee received 33 submissions from across Australia both in favour of and against the treaties. These included submissions from: uranium mining industry representatives, environmental organisations, anti-nuclear organisations and private individuals. The Committee also received 84 form letters all against the treaties. The Committee then conducted public hearings where there was the most interest in the treaties, namely: Canberra, Adelaide, Perth and Melbourne.

In addition to the Committee's review, the House of Representatives Standing Committee on Industry and Resources inquired into developing Australia's non-fossil fuel energy industry: Case study into the strategic importance of Australia's uranium resources, and the Prime Minister's uranium taskforce inquired into nuclear energy and uranium mining and processing in Australia.


The Committee believes its review has highlighted the main issues surrounding the sale of uranium to China and its broad estimated impact on Australia. This includes the issue of safeguarding Australian uranium and nuclear technology once it reaches China and ensuring it is used only for peaceful purposes and in

accordance with the International Atomic Energy Agency's nuclear safeguards system.

The Committee has weighed up the evidence it has received through its inquiry and concluded that the sale of uranium to China is in Australia's national interest and that the safeguards agreement offers adequate assurance that China will use Australian uranium and technology for peaceful purposes only. The Committee has made recommendations to strengthen some aspects of the safeguards arrangements.

The Committee sincerely thanks all the community and national organisations, peak industry organisations, State Governments and individual citizens who committed their time and effort to provide submissions and appear at public hearings for this inquiry.

**Dr Andrew Southcott MP**  
**Chair**



## Membership of the Committee

Chair            Dr Andrew Southcott MP

Deputy Chair   Mr Kim Wilkie MP

Members	Hon Dick Adams MP	Senator Andrew Bartlett
	Mr Michael Johnson MP	Senator Carol Brown
	Mr Michael Keenan MP	Senator Brett Mason
	Mrs Margaret May MP	Senator Julian McGauran
	Mrs Sophie Mirabella MP	Senator Glenn Sterle
	Mr Bernie Ripoll MP	Senator Russell Trood
	Hon Bruce Scott MP	Senator Dana Wortley



## Committee Secretariat

Secretary	James Rees
Inquiry Secretary	Stephanie Mikac
Research Officer	Serica Mackay
Administrative Officer	Heidi Lushtinetz



## Resolution of appointment

The Resolution of Appointment of the Joint Standing Committee on Treaties allows it to inquire into and report upon:

- a) matters arising from treaties and related National Interest Analyses and proposed treaty actions presented or deemed to be presented to the Parliament;
- b) any question relating to a treaty or other international instrument, whether or not negotiated to completion, referred to the committee by:
  - (i) either House of the Parliament, or
  - (ii) a Minister; and
- c) such other matters as may be referred to the committee by the Minister for Foreign Affairs and on such conditions as the Minister may prescribe.



## List of abbreviations

AA	Administrative Arrangements
ACF	Australian Conservation Foundation
AMEC	Association of Mining and Exploration Companies
ANAWA	Anti-Nuclear Alliance of Western Australia
ANSTO	Australian Nuclear Science and Technology Organisation
AONM	Australian Obligated Nuclear Material
ASNO	Australian Safeguards and Non-Proliferation Office
AUA	Australian Uranium Association
CAEA	China Atomic Energy Authority
CTBT	Comprehensive Nuclear Test Ban Treaty
CO <sub>2</sub>	Carbon Dioxide
DFAT	Department of Foreign Affairs and Trade
FDI	Future Directions International
FOEA	Friends of the Earth Australia
GDP	Gross Domestic Product
GNEP	Global Nuclear Energy Partnership
HLW	High-Level Waste
IAEA	International Atomic Energy Agency

kWh	Kilowatt hours
MAPW	Medical Association for Prevention of War (Australia)
MCA	Minerals Council of Australia
MUF	Material Unaccounted For
NGO	Non Government Organisation
NIA	National Interest Analysis
NMTA	Nuclear Material Transfer Agreement
NPP	Nuclear Power Plant
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NSG	Nuclear Supplier Group
OECD	Organization for Economic Cooperation and Development
OPAL	Open Pool Australian Lightwater Reactor
PNDWA	People for Nuclear Disarmament Western Australia
RIS	Regulation Impact Statement
SF	Spent Fuel
UK	United Kingdom
UNSW	University of New South Wales
US	United States of America
WILPF	Women's International League for Peace and Freedom (Australian Section)



# List of recommendations

## 6 Committee comment and recommendations

### Recommendation 1

The Committee recommends that the Australian Government provide funding for intensive research and development in the area of energy generation using thorium reactors with the purpose of comparing its waste and energy generation capacity to conventional nuclear reactors.

### Recommendation 2

The Committee recommends that the Australian Government through its membership of the International Atomic Energy Agency (IAEA) calls for an urgent review of the IAEA's funding requirements and that Australia sets a lead by increasing its voluntary contributions and lobbies other governments to do likewise.

### Recommendation 3

The Committee recommends that the Australian Government lobbies the IAEA and the five declared nuclear weapons states under the NPT to make the safeguarding of all conversion facilities mandatory.

### Recommendation 4

The Committee recommends that the Australian Government increases funding allocated to the Australian Safeguards and Non-Proliferation Office's safeguards support and international outreach programs to ensure that effective safeguards are being applied in regard to the treaties.

### Recommendation 5

The Committee recommends that the Australian Government continue its dialogue with the Chinese Government about governance and transparency issues with a view to the Australian Government offering practical support where appropriate.

**Recommendation 6**

The Committee supports the *Agreement between the Government of Australia and the Government of the People's Republic of China on the Transfer of Nuclear Material* and recommends that binding treaty action be taken.

**Recommendation 7**

The Committee supports the *Agreement between the Government of Australia and the Government of the People's Republic of China for Cooperation in the Peaceful Uses of Nuclear Energy* and recommends that binding treaty action be taken.



## Introduction

### Purpose of the report

- 1.1 The Joint Standing Committee on Treaties conducted a review of two treaty actions tabled in Parliament on 8 August 2006.<sup>1</sup> These treaty actions are:
- *Agreement between the Government of Australia and the Government of the People's Republic of China on the Transfer of Nuclear Material* (Canberra, 3 April 2006)
  - *Agreement between the Government of Australia and the Government of the People's Republic of China for Cooperation in the Peaceful Uses of Nuclear Energy* (Canberra, 3 April 2006).
- 1.2 The Committee's review of these treaty actions is focused on whether the treaties are in Australia's national interest. To this effect, the Committee has concentrated on the main issues arising from the treaties: the impact of the sale of uranium to China; and safeguarding the use of Australian uranium. Where appropriate, the Committee has also provided information on issues arising from the indirect impact of the treaty actions, namely environmental and social issues.
- 1.3 A summary of the evidence submitted to this inquiry is included in this report. Chapter 2 examines the Nuclear Material Transfer Agreement. Chapter 3 examines the Nuclear Cooperation Agreement. Chapters 4 and 5 outline issues surrounding the expected impact of

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<sup>1</sup> Australia, House of Representatives 2004-05-06, *Votes and Proceedings*, No. 112, p. 1268; Senate 2004-06, *Journal*, No. 91, p. 2379. The remaining treaties tabled on 8 August 2006 are included in the Committee's Report 77.



the Agreements and safeguarding the use of Australian uranium. Chapter 6 outlines the Committee's conclusions and its recommendations in relation to the issues raised during the inquiry. The Committee also makes comment about the inquiry timeframe.

## Briefing documents

- 1.4 The advice in this Report refers to the National Interest Analyses (NIAs) prepared for the proposed treaty actions. These documents are prepared by the Government agency (or agencies) responsible for the administration of Australia's responsibilities under each treaty. Copies of the NIAs may be obtained from the Committee Secretariat or accessed through the Committee's website at:

[www.aph.gov.au/house/committee/jsct/8august2006/tor.htm](http://www.aph.gov.au/house/committee/jsct/8august2006/tor.htm)

- 1.5 Copies of treaty actions and NIAs may also be obtained from the Australian Treaties Library maintained on the internet by the Department of Foreign Affairs and Trade. The Australian Treaties Library is accessible through the Committee's website or directly at:

[www.austlii.edu.au/au/other/dfat/](http://www.austlii.edu.au/au/other/dfat/)

## The Committee's review

- 1.6 The review contained in this report was advertised in the national press and on the Committee's website.<sup>2</sup> Invitations to lodge submissions were also sent to all State Premiers, Chief Ministers, Presiding Members of Parliament, stakeholder organisations and to individuals who have expressed an interest in being kept informed of proposed treaty actions. Submissions received and their authors are listed at Appendix A. Exhibits received are listed at Appendix B.

- 1.7 The Committee also received evidence at public hearings held on 4 September and 16 October 2006 in Canberra, 5 October 2006 in Adelaide, 6 October 2006 in Perth and 25 October 2006 in Melbourne. A list of witnesses who appeared before the Committee at public hearings is at Appendix C. Transcripts of evidence from public hearings may be obtained from the Committee Secretariat or accessed through the Committee's website at:

[www.aph.gov.au/house/committee/jsct/8august2006/hearings2.htm](http://www.aph.gov.au/house/committee/jsct/8august2006/hearings2.htm)

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2 The Committee's review of the proposed treaty actions was advertised in *The Australian* on 16, 23 August and 6 September 2006. Members of the public were advised on how to obtain relevant information and invited to submit their views to the Committee, both in the advertisement and via the Committee's website.

## Agreement with the People's Republic of China on the Transfer of Nuclear Material

### Purpose of the Nuclear Material Transfer Agreement

- 2.1 The *Agreement between the Government of Australia and the Government of the People's Republic of China on the Transfer of Nuclear Material*, (the Nuclear Material Transfer Agreement) creates a nuclear safeguards and physical protection regime for the supply of Australian Obligated Nuclear Material (AONM)<sup>1</sup> to China.<sup>2</sup> The second agreement, expanded on in the next chapter, the *Agreement between the Government of Australia and the Government of the People's Republic of China for Cooperation in the Peaceful Uses of Nuclear Energy* (the Nuclear Cooperation Agreement), provides for cooperation on nuclear related matters, including the transfer of nuclear-related material, equipment and technology.<sup>3</sup>
- 2.2 Together, the Agreements have the same effect as the provisions contained in Australia's other nuclear material safeguards agreements.<sup>4</sup> Australia's other nuclear material safeguards

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1 AONM is defined in the Nuclear Material Transfer Agreement as Australian uranium and nuclear material derived from it. E.g. Plutonium.

2 National Interest Analysis (NIA), para. 6.

3 NIA, para. 5.

4 NIA, para. 5; Australia's safeguards agreements are with: the Republic of Korea, the United Kingdom of Great Britain, Finland, the United States of America, Canada, Sweden, France, Euratom (or the European Atomic Energy Community which includes the 25 Member States of the European Union and is administered by the European Commission), Philippines, Japan, Switzerland, Egypt, the Russian Federation, Mexico,

agreements combine nuclear material transfers (incorporating safeguards) and cooperation into one agreement.<sup>5</sup> The purpose of Australia's nuclear material safeguards agreements is to provide assurances that AONM is used exclusively for peaceful purposes, and not diverted to nuclear weapons or for other military purposes. These agreements form part of Australia's obligations under the International Atomic Energy Agency's (IAEA)<sup>6</sup> safeguards system, which is aimed at the non-proliferation of nuclear weapons.<sup>7</sup>

- 2.3 The Committee was informed that the Chinese Government requested two agreements instead of the usual one to reflect its domestic responsibilities for implementing international agreements.<sup>8</sup>
- 2.4 The Nuclear Material Transfer Agreement establishes strict safeguards arrangements and conditions which ensures that AONM equivalence is applied to AONM exported to China with the aim of ensuring that it is used exclusively for peaceful purposes. The Australian Safeguards and Non-Proliferation Office (ASNO) informed the Committee that provisions included in the Agreements are equivalent to, and in some areas stronger than, Australia's bilateral

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New Zealand, Czech Republic, the United States of America (for transfers to Taiwan), Hungary and Argentina. NIA Attachment. In addition, Australia has an NPT safeguards Agreement concluded on 10 July 1974 with the IAEA and an Exchange of Notes Constituting an Agreement with Singapore Concerning Cooperation on the Physical Protection of Nuclear Materials, which entered into force on 15 December 1989. NIA, List of Australia's bilateral nuclear safeguards agreements; Department of Foreign Affairs and Trade, Australian Safeguards and Non-Proliferation Office, Australia's Network of Nuclear Safeguards Agreements, viewed 26 October 2006, <[www.dfat.gov.au](http://www.dfat.gov.au)>; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 22.

5 NIA, para. 5.

6 The International Atomic Energy Agency (IAEA) is a United Nations organisation created in 1957. The IAEA is an independent, intergovernmental science and technology-based organisation tasked with promoting safe, secure and peaceful global cooperation in nuclear technologies. The IAEA also helps its member states in planning and using nuclear science and technology for peaceful purposes including the generation of electricity. In addition, the IAEA is charged with developing nuclear safety standards and verifying through its inspection system that states comply with their commitments under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and other non-proliferation agreements. These agreements provide for the peaceful use of nuclear material and facilities. IAEA, viewed 26 October 2006, <[www.iaea.org](http://www.iaea.org)>; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 20.

7 NIA, para. 10; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 21.

8 NIA, para. 5; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 20.

nuclear agreements<sup>9</sup> with the four remaining declared nuclear-weapon States.<sup>10</sup>

- 2.5 Each safeguards Agreement including this Agreement includes a confidential Administrative Arrangement (AA), which is a less-than-treaty status agreement, setting out the operational arrangements for the principles committed to by the parties to the treaty level safeguards agreement.<sup>11</sup> The AAs include accounting procedures and reporting required for tracking AONM. ASNO informed the Committee that the negotiation and inclusion of AAs for nuclear transfer agreements is standard practice.<sup>12</sup>
- 2.6 ASNO and China's equivalent nuclear authority, the China Atomic Energy Authority (CAEA) will administer the AA.<sup>13</sup>

## Benefits of the Nuclear Material Transfer Agreement

- 2.7 The Australian Government has stated that in addition to strengthening Australia-China ties and capitalising on China's rapidly expanding nuclear energy sector, the Nuclear Material Transfer Agreement with China would benefit Australia:
- by enabling the transfer of nuclear material (namely uranium) between Australia and China subject to nuclear safeguards and appropriate controls consistent with Australia's policies and obligations to prevent the proliferation of nuclear weapons;
  - by providing assistance to China to achieve environmental benefits by reducing greenhouse gas emissions through the use of nuclear power; and

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9 NIA, para. 6; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, pp. 20-22.

10 The five declared nuclear weapon States as identified by the NPT are: China, France, the Russian Federation, the United Kingdom of Great Britain and the United States of America. The International Atomic Energy Agency, viewed 17 August 2006, <[www.iaea.org/index.html](http://www.iaea.org/index.html)>.

11 NIA, paras 23 and 31.

12 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 21.

13 Nuclear Non-Proliferation, Trade and Security, Nuclear Exports and Safeguards, Australia's Network of Nuclear Safeguards Agreements, Department of Foreign Affairs and Trade, viewed 17 August 2006, <[www.dfat.gov.au](http://www.dfat.gov.au)>; Article II; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 21 and 25 October 2006, p. 35.

- through the consolidation of Australia's position as a reliable supplier of energy resources.<sup>14</sup>
- 2.8 The Committee also received evidence about the treaties' economic and environmental impacts and their safeguards. Issues pertaining to safeguards include comment on their estimated effectiveness and how they are expected to operate.
- 2.9 Further discussion on the impact of the Agreement is included in Chapter 4. Further discussion on the safeguards included in the Agreements is in Chapter 5.

## **Australia's obligations under the Nuclear Material Transfer Agreement**

- 2.10 Under the Nuclear Material Transfer Agreement, Australia and China would be obliged to ensure that no nuclear material transferred between Parties is ever used for, or diverted to, any military purpose.<sup>15</sup>
- 2.11 Article III requires Parties to apply the Nuclear Material Transfer Agreement to all nuclear material transferred for peaceful non-explosive purposes, regardless of whether it is transferred directly or through a third party. Article III applies to any nuclear material produced (including irradiated nuclear material produced by China which is subject to the Nuclear Material Transfer Agreement), processed or used in, or produced through the direct and major contribution of material, equipment, components or technology transferred between countries in line with provisions contained in the Nuclear Cooperation Agreement.<sup>16</sup>
- 2.12 Article IV requires that nuclear material would remain subject to the Nuclear Material Transfer Agreement until that nuclear material was no longer useable for nuclear activity and practically irrecoverable (as determined by the IAEA), or had been transferred beyond the territorial jurisdiction of the Party, unless otherwise agreed by the Parties.<sup>17</sup>

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14 NIA, para. 7; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 20.

15 NIA, para. 15

16 NIA, para. 16.

17 NIA, para. 17.

- 2.13 Article V, Article I(a) and Annex E obliges Parties to prohibit the use of nuclear material for any nuclear weapons or other nuclear explosive device or associated research and development, or for any military purpose. The Agreement does not allow the use of nuclear material for the production of tritium for military purposes, for military nuclear propulsion, or for direct military non-nuclear applications such as munitions including depleted uranium munitions.<sup>18</sup>
- 2.14 Article VI obliges Parties to apply the Nuclear Material Transfer Agreement to comply with the IAEA's safeguards agreements.<sup>19</sup>
- 2.15 Article VII obliges Parties to arrange for alternative safeguards equivalent to the IAEA safeguards system, in the event that the IAEA safeguards cease to apply in either Party's jurisdiction.<sup>20</sup>
- 2.16 Article VIII obliges Parties to ensure that adequate physical protection measures consistent with the international standard, cover nuclear material subject to the proposed Agreement within their jurisdiction and while in transport until responsibility is properly transferred to another State, as appropriate.<sup>21</sup>
- 2.17 Article IX requires Parties to obtain permission from one another before transferring nuclear material supplied by the other Party to a third country, except in accordance with Annex A. Annex A provides automatic prior consent for transfers within Australia's network of bilateral nuclear agreements provided certain conditions are met. Article IX also requires a Party to obtain prior consent from the supplier Party before enriching supplied nuclear material to a level of 20 per cent or more in the isotope Uranium-235 or reprocessing supplied nuclear material. Under Annex C, Australia undertakes under the specified conditions, to give reprocessing consent when China's plans for reprocessing are sufficiently advanced for it to nominate the facilities, reactors and other facilities concerned for inclusion in the Delineated Chinese Nuclear Fuel Cycle Program.<sup>22</sup>
- 2.18 Articles X and XI outline implementation obligations and oblige Parties to establish and maintain an accounting system to control

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18 NIA, para. 18; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 20.

19 NIA, para. 19.

20 NIA, para. 20; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, pp. 20-22.

21 NIA, para. 21.

22 NIA, para. 22.

nuclear material subject to the Agreement and regularly consult on implementation. Article X also obliges Parties to put AAs in place to implement the Agreement. The AAs specify reporting, material accounting and other implementation details.<sup>23</sup>

- 2.19 Article XII obliges Parties to take action as requested by the other Party to ensure compliance with Articles III to XI and Article XIII of the Agreement. Article XII enables either Party supplying nuclear material to suspend or cancel further transfers of nuclear material if compliance with the Agreement and the IAEA safeguards is not attained.<sup>24</sup>
- 2.20 Annex D provides that Australia may inform China when non-nuclear ores or concentrates containing trace, but recoverable quantities of nuclear material are transferred from Australia to China. Annex D obliges China, when it is notified to ensure that no nuclear material is extracted from such ores for nuclear use. Annex D also requires China not to extract nuclear material until the Parties have consulted and agreed safeguards measures to apply to such nuclear material. The AAs will include notification procedures.<sup>25</sup>
- 2.21 Article XIII provides for a dispute resolution process. The process includes the appointment of a three member arbitral tribunal, whose decisions are binding on the Parties.<sup>26</sup>

## The Australian Government's consultation

- 2.22 ASNO informed the Committee that in 2004, the Australian Government was approached by both Chinese Government officials and Australian uranium producers<sup>27</sup> and asked to consider a formal Agreement to sell uranium to China.<sup>28</sup> Australian uranium producers were consulted prior to the start of treaty negotiations with China.<sup>29</sup>

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23 NIA, para. 23.

24 NIA, para. 24.

25 NIA, para. 25.

26 NIA, para. 26; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 33.

27 These producers are: BHP Billiton (Olympic Dam Mine), Energy Resources Australia (Ranger Mine), Heathgate Resources (Beverley Mine), and other mines given approval to operate. RIS, p. 5.

28 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 33.

29 RIS, p. 5.

- 2.23 Commonwealth agencies<sup>30</sup> participated in negotiations held on 18-19 January, 28 February-1 March 2006, interdepartmental committee meetings held on 10 and 22 February 2006, and contributed to briefings. Additional Commonwealth agencies were briefed through the Nuclear Agencies Consultation Committee on 4 May 2006. No objections to the Agreements were raised by Commonwealth agencies.<sup>31</sup>
- 2.24 State and Territory Governments were consulted about the treaties through the Commonwealth-State/Territory Standing Committee on Treaties at its meeting on 17 May 2006. There has been no opposition to the treaties from any State, Territory or Federal Government organisations,<sup>32</sup> but it should be noted that uranium is only mined in two jurisdictions, South Australia and the Northern Territory.
- 2.25 Public consultation commenced after a bilateral Nuclear Material Safeguards Agreement with China was discussed at Senate Estimates hearings on 17 February 2005. On 9 August 2005, a press release was issued announcing that the Australian Government had decided to proceed with negotiations on a bilateral Nuclear Material Safeguards Agreement with China. The Agreement and frequently asked questions and answers were made available on the ASNO website shortly after both Agreements were signed.<sup>33</sup>
- 2.26 Public enquiries related to the Nuclear Material Transfer Agreement and the Nuclear Cooperation Agreement have been handled by ASNO, the North Asia Division of DFAT and the Uranium Industry Section of the Department of Industry, Tourism and Resources.<sup>34</sup>
- 2.27 The Australian Government received 90 public enquiries in relation to the Agreements. Approximately 10 per cent of these were positive or neutral. Relevant Government Departments replied to enquiries that sought information (approximately 50%). Most enquiries raised concerns about human rights and freedom of expression in China. In responding, DFAT explained that the Australian Government's
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30 These are: the Department of Foreign Affairs and Trade, Australian Safeguards and Non-Proliferation Office, Prime Minister and Cabinet, Attorney-General's Department, Department of Defence, Department of Industry, Tourism and Resources, Department of Education, Science and Training and the Australian Nuclear Science and Technology Organisation. Regulation Impact Statement (RIS), para. 5.

31 NIA Consultation Annex, para. 3.

32 RIS, p. 6.

33 These treaties were signed on 3 April 2006; NIA Consultation Annex, para. 4.

34 NIA Consultation Annex, para. 4.



approach to pursuing human rights issues with China is directly through discussion and practical cooperation. The Committee believes that these approaches are facilitated by stronger links between Australia and China. ASNO informed the Committee that where safeguard related issues were raised, published materials were drawn on, including ASNO's annual reports, to explain the operation of the nuclear non-proliferation regime, the work of the IAEA and the practical application of nuclear safeguards in the transfer and use of nuclear material.<sup>35</sup>

## Costs of implementation

- 2.28 Costs will be incurred for ASNO officers' travel to China to facilitate operation of the nuclear material accounting system. These costs will be absorbed by the Department of Foreign Affairs and Trade.<sup>36</sup>

## Implementing legislation

- 2.29 No new legislation or regulations are required to give effect to Australia's obligations under the Agreement. However, it is necessary to promulgate regulations pursuant to the *Nuclear Non-Proliferation (Safeguards) Act 1987* and the *Australian Radiation Protection and Nuclear Safety Act 1998* to add the Nuclear Material Transfer Agreement to the list of prescribed agreements under the Acts.<sup>37</sup>
- 2.30 No legislative or regulatory changes will be required to the existing roles of the Commonwealth, States or Territories as a result of implementing the Agreement.<sup>38</sup>

## Entry into force and withdrawal

- 2.31 The Agreement will enter into force 30 days after the date of the last notification between Parties that all domestic procedures have been completed for this Agreement and the Nuclear Cooperation Agreement.<sup>39</sup>

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35 NIA Consultation Annex, para. 5.

36 NIA, para. 28.

37 NIA, para. 27.

38 RIS, p. 6.

39 NIA, para. 4.

2.32 Article XV of the Agreement provides that it will remain in force for an initial period of 30 years. Either Party may terminate the Agreement by written notice. The Agreement would automatically terminate if the Nuclear Cooperation Agreement were terminated. Under Article XV, termination would not release either party from obligations in respect of nuclear material transferred while the Nuclear Material Transfer Agreement was in force.<sup>40</sup>

### **Further discussion on the Nuclear Material Transfer Agreement**

2.33 The economic, environmental and social impact of the Nuclear Material Transfer Agreement is discussed in more detail in Chapter 4.

2.34 The Committee also received evidence about the treaties' safeguards, namely, their estimated effectiveness and how they are expected to operate. Issues pertaining to the safeguards included in the Agreements are discussed further in Chapter 5.

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40 NIA, para. 32.



## Agreement with the People's Republic of China for Cooperation in the Peaceful Uses of Nuclear Energy

### Purpose of the Nuclear Cooperation Agreement

- 3.1 *The Agreement between the Government of Australia and the Government of the People's Republic of China for Cooperation in the Peaceful Uses of Nuclear Energy* (the Nuclear Cooperation Agreement) will establish a broad framework for cooperation between Australia and China in respect to the peaceful uses of nuclear energy. The provisions contained in the Nuclear Cooperation Agreement are at least equivalent to those of Australia's bilateral nuclear agreements with the four remaining declared nuclear-weapon states.<sup>1</sup>
- 3.2 The Nuclear Cooperation Agreement provides for collaboration across a range of peaceful applications of nuclear equipment and technology. Early areas of work may be in material science research at the Open Pool Australian Lightwater reactor (OPAL),<sup>2</sup> the research

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1 The five nuclear weapon states as identified by NPT are: China, France, the Russian Federation, the United Kingdom of Great Britain and the United States of America. International Atomic Energy Agency, viewed 17 August 2006, <[www.iaea.org/index.html](http://www.iaea.org/index.html)>.

2 OPAL is a 20 megawatt pool reactor using low enriched uranium fuel, and cooled by water. OPAL is a multipurpose facility for radioscopic production, irradiation services and neutron beam research. Its compact core is designed to achieve high performance in the production of neutrons. The building is constructed from reinforced concrete; it is seismically qualified and has a metallic grillage for protection from a light aircraft crash.

reactor managed by the Australian Nuclear Science and Technology Organisation (ANSTO) located in Sydney.<sup>3</sup> Other opportunities provided under the Nuclear Cooperation Agreement include collaborative projects in nuclear safeguards and security with the Australian Safeguards and Non-Proliferation Office (ASNO).<sup>4</sup>

- 3.3 The Nuclear Cooperation Agreement would ensure that safeguards obligations applicable to Australian Obligated Nuclear Material (AONM) are applied in accordance with the Nuclear Material Transfer Agreement. It would also ensure that appropriate safeguards are applied to material, equipment, components or technology transferred between the parties. Specifically, any nuclear material produced, processed or used in or produced through the direct and major contribution of material, equipment, components or technology transferred between Australia and China would become nuclear material subject to the Nuclear Material Transfer Agreement.<sup>5</sup>
- 3.4 ANSTO and ASNO would be responsible for the implementation of cooperation under the Nuclear Cooperation Agreement.<sup>6</sup>

## **Benefits of the Nuclear Cooperation Agreement**

- 3.5 The Australian Government has stated that the Nuclear Cooperation Agreement would serve to strengthen Australia-China ties and benefit Australia by:
- creating a framework for cooperation with China in relation to nuclear science and technology, enabling collaborative work in nuclear research; and
  - providing for the transfer of material, equipment, components or technology, with requisite controls consistent with Australia's policies relevant to the prevention of the proliferation of nuclear weapons.<sup>7</sup>

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Australian Nuclear Science and Technology Organisation, viewed 21 August 2006, <[www.ansto.gov.au](http://www.ansto.gov.au)>.

3 NIA, para. 5; Mr Steven McIntosh, *Transcript of Evidence*, 4 September 2006, p. 32.

4 NIA, para. 5.

5 NIA, para. 9.

6 NIA, para. 10.

7 NIA, paras 6-7.

3.6 The Nuclear Cooperation Agreement is not expected to provide economic benefits in the short term, but rather serve to aid in the expansion of future collaborative research and development with China. The immediate benefits of the Nuclear Cooperation Agreement will be for research programs and the use of OPAL for advanced materials science.<sup>8</sup>

3.7 ANSTO informed the Committee about future cooperation with China in relation to the Nuclear Cooperation Agreement:

In relation to how the agreement will assist in future cooperation with China, the main benefit under this agreement is that, for the first time in our relationship with China, we will have a treaty-level understanding that intellectual property issues will be taken into account in specific areas of cooperation. That is obviously of importance to ANSTO and to Australia. We will be able to ensure that Australia receives a proper return from cooperation with China in particular areas. As I said to Mr Adams, the particular areas of cooperation are a little uncertain at the moment beyond the OPAL neutron beam instruments, although we are cooperating with them at the moment in looking at atmospheric pollution, for instance. We are building the world's highest tower for monitoring the atmosphere, in Tibet. That utilises some ANSTO facilities and it is under the auspices of the World Meteorological Organisation. As for specific things in nuclear technology, we will have to wait and see how that goes.<sup>9</sup>

3.8 The Committee received evidence about the expected economic and environmental impact of the Nuclear Material Transfer Agreement and the Nuclear Cooperation Agreement. Issues raised in relation to the impact of the treaties are discussed further in Chapter 4. Issues raised in relation to the safeguards included in the Agreements are discussed further in Chapter 5.

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8 Regulations Impact Statement (RIS), p. 4.

9 Mr Steve McIntosh, *Transcript of Evidence*, 4 September 2006, pp. 38-39.

## Australia's obligations under the Nuclear Cooperation Agreement

- 3.9 The key obligations on both Parties are to cooperate in the peaceful uses of nuclear energy and to ensure that no material, equipment, components or technology transferred under the proposed Nuclear Cooperation Agreement are ever used for, or diverted to, any military purpose including use in nuclear weapons, nuclear explosive devices or depleted uranium munitions.<sup>10</sup>
- 3.10 Article I requires that any cooperation in the peaceful uses of nuclear energy would be undertaken under the terms of the Agreement. Such collaboration in the transfer of nuclear material would be subject to the Nuclear Material Transfer Agreement, and the transfer of material, equipment, components or technology.<sup>11</sup>
- 3.11 Article IV would oblige Parties to apply the requirements of the Nuclear Material Transfer Agreement to all nuclear material, equipment, components and technology transferred between Australia and China for peaceful non-explosive purposes, regardless of whether transferred directly or through a third country.<sup>12</sup>
- 3.12 Article V obliges Parties to develop cooperation in the peaceful uses of nuclear energy on the basis of equality and mutual benefit and in accordance with applicable laws in force in each country.<sup>13</sup>
- 3.13 Article VII obliges Parties to conclude specific written instruments for each particular field of cooperation. In the absence of such an agreed specific written instrument, cooperation under the Nuclear Material Transfer Agreement could not take place.<sup>14</sup>
- 3.14 Article IX would require that material, equipment, components and technology would remain subject to the Nuclear Material Transfer Agreement until certain specified conditions had been satisfied, namely that the material, equipment, components or technology was no longer useable or had been transferred beyond the territorial jurisdiction of the Party, unless the Parties otherwise agree.<sup>15</sup>

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10 NIA, para. 11.

11 NIA, para. 12.

12 NIA, para. 13.

13 NIA, para. 14.

14 NIA, para. 15.

15 NIA, para. 16.

- 3.15 Article X obliges Parties to ensure that adequate physical protection measures, consistent with the current international standard, are applied to material, equipment, components and technology subject to the proposed Nuclear Material Transfer Agreement within their jurisdiction, and while in transport until responsibility is transferred to another State, as appropriate.<sup>16</sup>
- 3.16 Article XI obliges Parties to prevent the transfer of nuclear material, equipment, components and technology subject to the proposed Nuclear Material Transfer Agreement to a third party without first obtaining a peaceful use assurance and prior written consent from the other Party.<sup>17</sup>
- 3.17 Article XIII obliges Parties to respect the confidentiality requirements of the other Party.<sup>18</sup>
- 3.18 Article XIV obliges Parties to establish an Administrative Arrangement (AA) to ensure the maintenance of a system for control of material, equipment, components and technology subject to the proposed Nuclear Material Transfer Agreement.<sup>19</sup>

## **The Australian Government's consultation**

- 3.19 ASNO informed the Committee that in 2004, the Australian Government was approached by both Chinese Government officials and Australian uranium producers<sup>20</sup> and asked to consider a formal Agreement to sell uranium to China.<sup>21</sup> Australian uranium producers were consulted prior to the start of treaty negotiations with China.<sup>22</sup>

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16 NIA, para. 17.

17 NIA, para. 18.

18 NIA, para. 19.

19 NIA, para. 20.

20 These producers are: BHP Billiton (Olympic Dam Mine), Energy Resources Australia (Ranger Mine), Heathgate Resources (Beverley Mine), and other mines given approval to operate. RIS, p. 5.

21 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 33.

22 RIS, p. 5.



- 3.20 Commonwealth agencies<sup>23</sup> participated in negotiations held on 18-19 January, 28 February-1 March 2006, interdepartmental committee meetings held on 10 and 22 February, and contributed to briefings. Additional Commonwealth agencies were briefed through the Nuclear Agencies Consultation Committee on 4 May 2006. No objections to the Agreements were raised by Commonwealth agencies.<sup>24</sup>
- 3.21 State and Territory Governments were consulted about the treaties through the Commonwealth-State/Territory Standing Committee on Treaties at its meeting on 17 May 2006. There has been no opposition to the treaties from any State, Territory or Federal Government organisations,<sup>25</sup> but again it should be noted that uranium is mined only in South Australia and the Northern Territory.
- 3.22 Public consultation commenced after a bilateral safeguards agreement with China was discussed at Senate Estimates hearings on 17 February 2005. On 9 August 2005, a press release was issued announcing that the Australian Government had decided to proceed with negotiations on a bilateral safeguards agreement with China. The Agreement and frequently asked questions and answers were made available on the ASNO website shortly after both Agreements were signed.<sup>26</sup>
- 3.23 Public enquiries related to the Nuclear Cooperation Agreement and the Nuclear Material Transfer Agreement have been handled by ASNO, the North Asia Division of DFAT and the Uranium Industry Section of the Department of Industry, Tourism and Resources.<sup>27</sup>
- 3.24 The Australian Government received 90 public enquiries in relation to the Agreements. Approximately 10 per cent of these were positive or neutral. Relevant Government Departments replied to enquiries that sought information (approximately 50%). Most enquiries raised concerns about human rights and freedom of expression in China. In responding, DFAT explained that the Australian Government's approach to pursuing human rights issues with China is directly
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23 These are: the Department of Foreign Affairs and Trade, Australian Safeguards and Non-Proliferation Office, Prime Minister and Cabinet, Attorney-General's Department, Department of Defence, Department of Industry, Tourism and Resources, Department of Education, Science and Technology and the Australian Nuclear Science and Technology Organisation. RIS, para. 5.

24 NIA Consultation Annex 3.

25 RIS, p. 6.

26 NIA Consultation Annex, para. 4.

27 NIA Consultation Annex, para. 4.

through discussion and practical cooperation. ASNO informed the Committee that where safeguards related issues were raised, published materials were drawn on, including ASNO's annual reports, to explain the operation of the nuclear non-proliferation regime, the work of the IAEA and the practical application of nuclear safeguards in the transfer and use of nuclear material.<sup>28</sup>

## Costs of implementation

- 3.25 Costs will be incurred for ASNO officers' travel to facilitate safeguards research and development, which will be absorbed by the Department of Foreign Affairs and Trade.<sup>29</sup>
- 3.26 Cooperation by ANSTO would be funded from within the ANSTO budget. The cost of any proposals for cooperation would be assessed before cooperation in any specific field was carried out pursuant to Article VII of the Nuclear Material Transfer Agreement.<sup>30</sup>

## Implementing legislation

- 3.27 No new legislation or regulations are required to give effect to Australia's obligations under the Agreement. However, it is necessary to promulgate regulations pursuant to the *Nuclear Non-Proliferation (Safeguards) Act 1987* and the *Australian Radiation Protection and Nuclear Safety Act 1998* to add the Nuclear Cooperation Agreement to the list of prescribed agreements under the Acts.<sup>31</sup>
- 3.28 No legislative or regulatory changes will be required to the existing roles of the Commonwealth, States or Territories as a result of implementing the Agreement.<sup>32</sup>

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28 NIA Consultation Annex, para. 5.

29 NIA, para. 28.

30 NIA, paras 22-23.

31 NIA, para. 21.

32 RIS, p. 6.

## Entry into force and withdrawal

- 3.29 The Nuclear Material Safeguards Agreement will enter into force 30 days after the date of the last notification between Parties that all domestic procedures have been completed for this Agreement and the Nuclear Material Transfer Agreement.<sup>33</sup>
- 3.30 The treaty text of the Nuclear Material Transfer Agreement provides that it would remain in force for an initial period of 30 years. Either Party may terminate the Agreement through written notification. The Nuclear Cooperation Agreement would terminate automatically if the Nuclear Material Transfer Agreement were terminated. Termination would not release either Party from obligations in respect of material, equipment, components and technology transferred while the Agreement was in force.<sup>34</sup>

## Further discussion on the Nuclear Cooperation Agreement

- 3.31 The Committee also received evidence about the treaties' safeguards, namely, their estimated effectiveness and how they are expected to operate. Issues pertaining to the safeguards included in the Agreements are discussed further in Chapter 5.

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33 NIA, para. 3.

34 NIA, para. 27.

## Impact of the Agreements

### Introduction

- 4.1 Chapter 4 deals predominantly with the impact of the intended purpose of the Nuclear Material Transfer Agreement, that is, the sale of uranium to China. In addition to receiving evidence in this regard, the Committee also received evidence on the potential environmental opportunity cost and social impact of selling uranium to China.
- 4.2 The second agreement under review, the Nuclear Cooperation Agreement provides for research programs, the use of OPAL<sup>1</sup> for advanced materials science and expands the scope of future collaborative research and development with China.<sup>2</sup> The Nuclear Cooperation Agreement is not expected to provide an economic benefit in the short term,<sup>3</sup> but rather provides benefits in the research and development of nuclear technology.

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1 OPAL is a 20 megawatt pool reactor using low enriched uranium fuel, and cooled by water. OPAL is a multipurpose facility for radioscopic production, irradiation services and neutron beam research. Its compact core is designed to achieve high performance in the production of neutrons. The building is constructed from reinforced concrete; it is seismically qualified and has a metallic grillage for protection from a light aircraft crash. Australian Nuclear Science and Technology Organisation, viewed 21 August 2006, <[www.ansto.gov.au](http://www.ansto.gov.au)>.

2 RIS, p. 4.

3 RIS, p. 4.

## Background

- 4.3 China has predicted that by 2020, it will consume four times more nuclear energy than at present and is seeking a secure, long-term source of uranium to satisfy its expanding nuclear energy program. China currently sources the majority of its uranium domestically, but will need to import uranium to meet its future energy demands.<sup>4</sup>
- 4.4 Australian uranium producers are interested in exporting uranium to China, but are currently denied access to this export market due to long-standing Australian Government policy. This policy limits supply of Australian uranium to countries with which Australia has bilateral safeguards agreements and detailed administrative arrangements in place.<sup>5</sup>
- 4.5 While China is a potential new market for uranium producers, there is currently no bilateral safeguards agreement in place with China. This led Australian uranium mining companies<sup>6</sup> together with Chinese Government officials to approach the Australian Government in 2004 to request that the Australian Government consider negotiating a bilateral safeguards agreement with China.<sup>7</sup> The treaties under review resulted from these negotiations.
- 4.6 The short-term impact of the Nuclear Material Transfer Agreement (which includes safeguards provisions) is expected to increase the volume of uranium exported from Australia by existing uranium producing companies, agents and agencies.<sup>8</sup>
- 4.7 The obvious impact the Agreements would have in the medium to long term is an increase in uranium production leading to the expansion of Australia's uranium industry. However, whether Australia's uranium industry can expand its production (in response to increased demand for uranium), is based on commercial decisions

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4 Regulation Impact Statement (RIS), p. 5.

5 RIS, p. 5.

6 BHP Billiton (Olympic Dam Mine, South Australia), Energy Resources Australia (Ranger Mine, Northern Territory), Heathgate Resources (Beverley Mine, South Australia) and other mines given approval to operate. RIS, p. 6.

7 Regulation Impact Statement (RIS), p. 1; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 33.

8 Nuclear Material Transfer Agreement National Interest Analysis (NMTA NIA) Consultation Annex, para. 1.

by mining companies, and approvals by relevant State, Territory, and Federal Governments.<sup>9</sup>

## The economic impact of the sale of uranium to China

### World uranium demand and supply

- 4.8 The Committee received evidence that the world demand for energy is growing quickly with total electricity consumption forecast to grow from 15 000 billion kWh per annum to approximately 24 000 billion kWh by 2025. The Australian Uranium Association (AUA) informed the Committee that approximately 3300 billion kWh of the 2025 total electricity consumption would be attributable to nuclear power generation. Currently, coal continues to be the primary source of electricity generation, with nuclear and natural gas also widely used.<sup>10</sup>
- 4.9 Further, by 2010 world uranium demand is expected to grow to 71 500 tonnes per annum and by 2020 to grow to 84 700 tonnes per annum. In 2006, primary production will have yielded 44 300 tonnes of uranium and secondary production will have yielded 21 100 tonnes of uranium. Secondary sources, which currently make up 35 per cent of nuclear generator demand are derived from: diluted weapons grade uranium (17%), reprocessed uranium (12%) and mined stocks (6%).<sup>11</sup>
- 4.10 There is consensus that as secondary supplies are declining, primary production will need to rise to meet demand.<sup>12</sup> AUA provides that because of the decline in secondary supplies, by 2020, global uranium production will have to rise by nearly 60 per cent to 70 500 tonnes per annum to meet demand.<sup>13</sup>
- 4.11 However, according to the International Atomic Energy Agency (IAEA) and the Organization for Economic Cooperation and Development's (OECD) latest *Red Book*,<sup>14</sup> global uranium resources

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9 RIS, p. 5.

10 Australian Uranium Association (AUA), *Submission 34*, pp. 3-4.

11 AMEC, *Submission 31*, p. 3.

12 AUA, *Submission 34*, p. 4; AMEC, *Submission 31*, p. 3; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 34.

13 AUA, *Submission 34*, p. 4.

14 The full title of the Red Book is *Uranium 2005: Resources, Production and Demand*. The Red Book is the recognised world reference on uranium and is based on official information

(supplies) are more than adequate to meet the projected global demand for uranium. As can be seen (by country break down) in Table 1.1, the total global uranium resource that can be mined for less than \$US130 per kilogram is approximately 4.7 million tonnes. Based on the 2004 nuclear electricity generation rate of demand, the amount of uranium resources available is sufficient for 85 years of use. Use of fast reactor technology would extend this timeframe to over 2500 years.<sup>15</sup>

- 4.12 In addition, continuing advances in nuclear technology will allow for the more effective use of uranium. Development is underway on reactors that can extract more than 30 times the energy of current reactors.<sup>16</sup>
- 4.13 The IAEA provides that the price of uranium has increased by 500 per cent since 2001 providing the impetus for new initiatives and investments in uranium exploration. Based on geological evidence and knowledge of uranium in phosphates, it is considered that there is more than 35 million tonnes of uranium available for exploiting. In 2005, global uranium exploration investment accounted for approximately \$200 million, up by 50 per cent since 2004. The growth in uranium exploration is expected to increase the uranium resource base and the world's uranium production capacity.<sup>17</sup>
- 4.14 The Australian Safeguards and Non-Proliferation Office (ASNO) informed the Committee that China has a long standing contract with Canada for the supply of uranium and recently signed transfer of nuclear material agreements with Kazakhstan and Namibia. ASNO informed the Committee that Australia would not be disadvantaged by other countries' long standing supply of uranium to China:

At the moment, uranium production is less than two-thirds of uranium demand worldwide because a substantial amount – I think it is something like 40 per cent – of uranium demand at the moment is being met through down-blending of ex-military material, mainly from Russia. It is clear that that

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received from 43 countries. IAEA, *Global Uranium Resources to Meet Projected Demand*, Staff Report, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

15 IAEA, *Global Uranium Resources to Meet Projected Demand*, viewed 2 November 2006, <[www.iaea.org](http://www.iaea.org)>.

16 IAEA, *Global Uranium Resources to Meet Projected Demand*, viewed 2 November 2006, <[www.iaea.org](http://www.iaea.org)>.

17 IAEA, *Global Uranium Resources to Meet Projected Demand*, viewed 2 November 2006, <[www.iaea.org](http://www.iaea.org)>.

supply is coming to an end and as a result there is now a scramble for long-term contracts. That is one factor that is driving the uranium price up quite substantially. So I would not be confident that other producers at the moment have surplus capacity that they are able to swing in to help new buyers. I think the market will stay tight for a period.<sup>18</sup>

**Table 1.1: Known recoverable naturally occurring uranium resources at less than US\$130 kg/Uranium<sup>19</sup>**

Country	Tonnes of uranium	Percentage of total uranium reserves %
Australia	1 143 000	24.1
Kazakhstan	816 000	17.2
Canada	444 000	9.4
US	342 000	7.2
South Africa	341 000	7.2
Namibia	282 000	5.9
Brazil	279 000	5.9
Niger	225 000	4.7
Russian Federation	172 000	3.6
Uzbekistan	116 000	2.4
Ukraine	90 000	1.9
Jordan	79 000	1.7
India	67 000	1.4
China	60 000	1.3
Other	287 000	6.1
<b>World total</b>	<b>4 743 000</b>	<b>100</b>

18 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 34.

19 IAEA, *Uranium 2005, Resources, Production and Demand (Red Book)*; AMEC, *Submission 31*, p. 2; Dr Justin Walawski, *Transcript of Evidence*, 6 October 2006, pp. 15-16; MCA, *Submission 32*, p. 8.



## China's demand for uranium

- 4.15 China is the world's largest country with a current population of approximately 1.3 billion people, a Gross Domestic Product (GDP) of approximately US\$2.3 trillion<sup>20</sup> and was ranked as the fourth largest economy globally in 2005.<sup>21</sup> China's real GDP growth rate in 2005 was 9.9 per cent.<sup>22</sup> Following the United States of America (US), China is also the world's second largest energy consumer<sup>23</sup> and carbon dioxide emitter.<sup>24</sup> It is estimated that by 2030, China will generate as much electricity as the US, Japan, Canada and Germany currently do together.<sup>25</sup> China is also Australia's third largest trading partner. In 2005, China was Australia's largest energy export market.<sup>26</sup>
- 4.16 In 2001, China's total installed energy generation capacity (of electricity) was 338.6 Gigawatts of which 74.4 per cent was from thermal power,<sup>27</sup> 24.5 per cent was from hydropower and 0.7 per cent was from nuclear power. In 2001, electricity production in China had an annual growth rate of 8 per cent with only 1.2 per cent of electricity produced from nuclear power. The Chinese Government has given priority for the increased use of natural gas, hydropower, and nuclear power for electricity generation.<sup>28</sup>
- 4.17 While China will continue to rely on coal and natural gas to power its growing electricity consumption,<sup>29</sup> it is expected that China will become more reliant on nuclear power as an alternative energy source, particularly for coastal regions where populations are growing rapidly and there is a recognised shortage of energy resources.<sup>30</sup>

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20 For the year 2005. IAEA, People's Republic of China, viewed 1 November 2006, <[www.iaea.org](http://www.iaea.org)> , p. 211.

21 International Monetary Fund, viewed 1 November 2006, <[www.imf.org](http://www.imf.org)>.

22 US Department of State, Bureau of East Asian and Pacific Affairs, Background Note: China, viewed 8 November 2006, <<http://www.state.gov>>.

23 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 20.

24 Australian Uranium Association (AUA), *Submission 34*, p. 8.

25 Minerals Council of Australia (MCA), *Submission 32*, p. ii.

26 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 20.

27 derived from coal and natural gas. MCA, *Submission 32*, p. ii; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 20.

28 MCA, *Submission 32*, p. ii; Mr Peter Morris, *Transcript of Evidence*, 16 October 2006, p. 6.

29 MCA, *Submission 32*, p. ii; Mr Peter Morris, *Transcript of Evidence*, 16 October 2006, p. 2.

30 IAEA, People's Republic of China, viewed 1 November 2006, <[www.iaea.org](http://www.iaea.org)>, p. 214; AUA, *Submission 34*, p. 8.

- 4.18 The Committee was informed that in China nuclear power is favoured as an alternative to coal fired power generation because it does not produce greenhouse gas emissions:

China is ... a member of the Asia-Pacific Partnership on Clean Development and Climate, in which Australia is participating with four other nations as well as China. This represents an important initiative currently with the greatest prospect of delivering real progress to abate greenhouse gas emissions. A key reason for the current interest in developing nuclear power is the role it can play in climate change management. The maths here is quite simple. Every 22 tonnes of uranium used saves the emission of about one million tons of CO<sub>2</sub> relative to coal fired generators producing the same amount of energy. On a life cycle basis, nuclear power plants emit less CO<sub>2</sub> than other energy production mechanisms.<sup>31</sup>

- 4.19 China has supported the generation of nuclear power for energy since 1970 and by June 1983 began construction on the Qinshan nuclear power plant. By 1991, the Qinshan nuclear power plant was connected to the electricity grid and nuclear power generation began on China's mainland. Following Qinshan, the Daya Bay nuclear power plants were the result of a joint venture and began operation in 1994.<sup>32</sup>

- 4.20 Since 1964, China has conducted research into various types of nuclear power generation including: liquid metal fast reactors, advanced passive pressurised water reactor simulators and high temperature gas reactors. Currently, pressurised water reactors are favoured for nuclear power generation, whilst other types of reactors are considered where appropriate.<sup>33</sup> The Australian Nuclear Science and Technology Organisation (ANSTO) informed the Committee:

We can expect China to become more involved in the development of new reactor designs. I think it is at that stage that they may start talking to people like us who have some expertise in the sorts of materials that you would need to run a generation IV reactor, because generation IV reactors are supposed to run at much higher temperatures than current reactors. ANSTO has some expertise in that area and it is at

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31 Mr Peter Morris, *Transcript of Evidence*, 16 October 2006, p. 2.

32 IAEA, People's Republic of China, viewed 1 November 2006, <[www.iaea.org](http://www.iaea.org)>, p. 216.

33 International Atomic Energy Agency, People's Republic of China, viewed 1 November 2006, <[www.iaea.org](http://www.iaea.org)>, p. 216.

that stage that we would start to cooperate with them on nuclear technology. At the moment, the area that we are looking to cooperate with them is in the area of neutron beam science on the use of instruments on the new OPAL reactor.<sup>34</sup>

- 4.21 China presently has nine nuclear power reactors in commercial operation and a further nuclear reactor will commence operations in 2007, bringing the total to ten.<sup>35</sup> China plans an almost 500 per cent increase in its nuclear capacity by 2020<sup>36</sup> with another five nuclear power plants (NPPs) under construction, 13 planned NPPs and a further 50 proposed NPPs.<sup>37</sup>
- 4.22 ASNO informed the Committee that China's nuclear power capacity in 2020 would be approximately 40 Gigawatts (equivalent to 40 large power reactors) and represents 4 per cent of China's expected installed electrical capacity at that time and 6 per cent of China's electricity output. This level of electricity production will be larger than the whole of Australia's current total electricity output.<sup>38</sup>
- 4.23 According to the IAEA, China has approximately 1 per cent (of the world's uranium resources) or 60 000 tonnes of known low cost recoverable uranium. The World Nuclear Association estimates that China has 10 000 more tonnes of low cost recoverable uranium or 70 000 tonnes. This is enough for China to meet its current energy requirements. However, if the planned and proposed NPPs come online, China will need to import uranium to meet its energy needs.<sup>39</sup>
- 4.24 China's current uranium production is 840 tonnes and this supplies 65 per cent of China's nuclear energy requirements. China imports the remaining 35 per cent from Kazakhstan, Namibia and Russia. It is estimated that China has a capacity to process 1320 tonnes of uranium per annum. China has also stepped up its domestic exploration efforts and has two new mines proposed that together will yield 300 tonnes of uranium per annum.<sup>40</sup>

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34 Mr Steve McIntosh, *Transcript of Evidence*, 4 September 2006, p. 32.

35 AMEC, *Submission 31*, p. 1; AUA, *Submission 34*, p. 9.

36 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 20.

37 Association of Mining and Exploration Companies (AMEC), *Submission 31*, p. 1; MCA, *Submission 32*, p. ii.

38 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 20.

39 MCA, *Submission 32*, p. 4.

40 MCA, *Submission 32*, pp. 4-5.

- 4.25 The main consideration for China's future energy requirements is 'how to provide economically secure and stable power ... and reduce the environmental impacts of generating this power.'<sup>41</sup>
- 4.26 The Committee was informed that the Australian Government expects that China would not seek to source more than approximately one third of its uranium requirements from any one-supplier country including Australia.<sup>42</sup> This would equate to around 2.5 thousand tonnes of uranium a year sourced from Australia.<sup>43</sup> China already has bilateral agreements with other countries and sources uranium from these countries.<sup>44</sup>

### Australia's uranium supply

- 4.27 As Table 1.1 shows, Australia has 24 per cent of the world's low cost recoverable uranium reserves. The Association of Mining and Exploration Companies (AMEC) informed the Committee that not all the known recoverable uranium reserves are economically recoverable. Australia has 36 per cent of world uranium reserves which are recoverable at low cost (approximately US\$40 per kilogram). As exploration activities are regulated, only limited exploration occurred between 1985-2005. Increased uranium exploration could result in the discovery of greater uranium reserves.<sup>45</sup>
- 4.28 AMEC stated that Australia's low cost recoverable uranium puts it at an advantage to countries such as Kazakhstan and Canada:

Figures that we have to hand are that Australia has 24 per cent of the known recoverable reserves and Kazakhstan has around 17 per cent. However, as I mentioned earlier, while we have 24 per cent of the world's known recoverable reserves, that does not necessarily translate into the economically recoverable reserves. In that regard, Australia is even more favourably positioned in that it has 36 per cent of the world's economically recoverable deposits. On top of that fact, 98 per cent of our reserves are at the lowest end of the market – that is, they can be mined for less than US\$40 per

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41 MCA, *Submission 32*, p. ii; Mr Peter Morris, *Transcript of Evidence*, 16 October 2006, p. 2.

42 RIS, p. 5.

43 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 22.

44 MCA, *Submission 32*, p. 5.

45 AMEC, *Submission 31*, p.2; Dr Justin Walawski, *Transcript of Evidence*, 6 October 2006, p. 14.

kilo. So our leverage in negotiation is significant and far in advance of Kazakhstan, Canada or other places around the world – or Namibia for that matter.<sup>46</sup>

4.29 AMEC informed the Committee that approximately 97 per cent of Australia's uranium resources at a cost of recovery of less than US\$40 per kg are located in the following deposits:

- Olympic Dam (the world's largest deposit), Beverley and Honeymoon, South Australia
- Jabiluka, Koongarra and Ranger, Northern Territory
- Kintyre and Yeelirrie, Western Australia.

Of these deposits, Olympic Dam, Ranger and Beverley are in production, Kintyre and Yeerilee can not be developed under West Australian Government policy, Jabiluka's reserves require traditional owner approval before mining and Honeymoon is not yet in operation.<sup>47</sup>

4.30 In addition, since 2001, Australia's production and exports of uranium have almost doubled from 5989 tonnes per annum (2001-2002) to 11 489 tonnes per annum in 2005-2006.<sup>48</sup>

4.31 International demand for uranium is increasing and the trend appears likely to continue. China is expected to increase its nuclear power generation capacity by almost 700 per cent in the next 25 years.<sup>49</sup>

4.32 By expanding its uranium exports, Australia could meet China's long-term uranium demand.<sup>50</sup> As already stated, China's planned total nuclear electricity capacity by 2020 will require an annual supply of about 8000 tonnes of uranium, which is a little less than Australia's total annual uranium exports over recent years.<sup>51</sup>

4.33 Representatives from the Government of South Australia provided evidence about the life expectancy of Australia's uranium mines:

Should the proposed expansion proceed, BHP has already indicated publicly that the life of Olympic Dam would be

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46 Dr Justin Walawski, *Transcript of Evidence*, 6 October 2006, pp. 15-16.

47 AMEC, *Submission 31*, p. 3; Dr Justin Walawski, *Transcript of Evidence*, 5 October 2006, p. 16.

48 AMEC, *Submission 31*, p. 3.

49 AMEC, *Submission 31*, p. 3.

50 NMTA NIA, para. 9.

51 RIS, p. 1.

something like 70 years – a very long-lived mine. In the case of the current Beverley mine, I do not think I can really comment on the life of the mine other than to say that it is probably within the next 10 years. Honeymoon is only a small deposit at this stage. It would have a life of somewhere between five and ten years, depending on the level of extraction.<sup>52</sup>

4.34 Representatives from the Government of South Australia added that there are no new proposals for uranium mines:

There are no other proposals that have come forward for mining developments at this stage. Bear in mind that from the point of exploration and discovery of uranium or a metals resource to the point of coming forward with a mining proposal there are usually some years. There is often something like five to seven years in terms of the discovery and proving up of a resource through to mining development. At this stage there are certainly quite a number of indications of uranium mineral occurrences that have been identified in the last few years during the mineral exploration upswing. But in terms of the likelihood of those coming forward as a mine, we would be looking at several years down the track. So there is nothing on the doorstep awaiting government assessment for a new mine.<sup>53</sup>

4.35 The Minerals Council of Australia (MCA) provided that because of strict uranium mining regulations in other Australian States, Australia's increase in uranium production would come from the expansion of Olympic Dam and from the Honeymoon Mine:

A significant part of the increase in resources for production and export would come from the expansion of the Olympic Dam and also from the Honeymoon mine, which will come into production in about two years time. There are opportunities for further expansion but they are restricted at the moment by state government policies. In particular, there are a number of known deposits in Western Australia and a number of other states which have not had the benefit of modern exploration techniques, although there is some application, of course, of those more modern approaches now, with a very significant increase, according to Australian

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52 Dr Edward Tyne, *Transcript of Evidence*, 5 October 2006, p. 25.

53 Dr Edward Tyne, *Transcript of Evidence*, 5 October 2006, pp. 26-27.

Bureau of Statistics figures, of exploration for uranium in Australia.<sup>54</sup>

- 4.36 The Committee received evidence that no forward contracts for the sale of uranium to China had been entered into, but anticipates that once the Agreements enter into force that uranium could be exported to China in the first half of 2007. Representatives from the Government of South Australia and AMEC agreed.<sup>55</sup> In relation to forward contracts, ASNO stated:

Contracts could be entered into at any time – though, to our knowledge, this has not yet occurred – but no material can actually be transferred into China until the agreements are in place, along with the ancillary documentation, the administrative arrangement and so on. We hope that that will all be in place by the end of the year. How quickly uranium then transfers into China really depends on commercial arrangements, whether the uranium bought will be processed in other countries before going to China or whether it will go directly to China for processing. In principle, we could have uranium going into China in the first half of next year, but that is speculative.<sup>56</sup>

#### Value of Australian uranium exports

- 4.37 ASNO informed the Committee that the economic benefit of the Agreements would provide an estimated value of an additional A\$250 million per annum<sup>57</sup> for Australia once they enter into force.
- 4.38 In 2005, Australia's uranium exports were worth A\$573 million.<sup>58</sup> With the Agreements in place, uranium exports would be worth around A\$820 million per annum.
- 4.39 Friends of the Earth Australia (FOEA) stated that the expected return of A\$250 million per annum from the sale of uranium to China is equivalent to approximately 0.33 per cent of the value of Australia's total exports to China in 2005. FOEA, the Australian Conservation Foundation (ACF), the Medical Association for Prevention of War (Australia) MAPW, the Anti-Nuclear Alliance of Western Australia

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54 Mr Peter Morris, *Transcript of Evidence*, 16 October 2006, p. 4.

55 Dr Edward Tyne, *Transcript of Evidence*, 5 October 2006, p. 24; Dr Justin Walawski, *Transcript of Evidence*, 6 October 2006, p. 16.

56 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 22.

57 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 22.

58 RIS, p. 6.

(ANAWA) and one other submission<sup>59</sup> put the view to the Committee that for such a small return, Australia was risking the misuse of its uranium (namely for weapons manufacture) and contributing to the environmental and social problems associated with nuclear waste management.<sup>60</sup> FOEA added that it believes the amount of A\$250 million is an overestimate:

I think that is an overestimate. I think it is highly likely that China's nuclear expansion plans will not be met, just as its previous nuclear expansion plans have not been met by a factor of two or more. Even if it does reach \$250 million per annum, that is an increase on existing exports to China of just over one per cent. So it is not great. Senator Ian Campbell says there are 'phenomenal' opportunities for renewable energy investment in China. More broadly on uranium sales, they account for less than one-third of one per cent of Australia's entire export income. That would strike many people as odd, given all the rhetoric we read about in the newspapers these days about getting rich on the back of uranium and Australia being the Saudi Arabia of the nuclear industry and so on.<sup>61</sup>

## Other issues

### Recruitment of skilled technicians and graduates

4.40 The Australian Nuclear Science and Technology Organisation (ANSTO) informed the Committee about Australia's situation in relation to the recruitment of skilled technicians and graduates in the area of nuclear technology:

We have put in place fairly recently an advanced materials group. In fact, we have recruited some people for that and we have put out expressions of interest for other people in the organisation to join that group. The expertise that the Australian Atomic Energy Commission used to have back in the 1960s and 1970s was really run down, and it is a matter of resuscitating it and rebuilding it. We have had continued expertise in waste forms, obviously, with synroc and so on.

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59 Ms Carol G. Williams, *Submission 15*, p. 3.

60 FOEA, *Submission 24*, p. 33; Dr Jim Green, *Transcript of Evidence*, 25 October 2006, p. 8; Mr David Noonan, *Transcript of Evidence*, 5 October 2006, p. 3; Mr James Courtney, *Transcript of Evidence*, 6 October 2006, p. 5.

61 Dr Jim Green, *Transcript of Evidence*, 25 October 2006, p. 8.



But, for the rest of the fuel cycle, we are now engaged in thinking about strategic recruiting of particular people. For instance, we are currently recruiting a new head for our Materials and Engineering Science Institute. The preferred candidate – who has not yet been announced publicly – is somebody from overseas with expertise in that area.<sup>62</sup>

### Selling uranium to India

4.41 The Committee was interested to know about the possible sale of uranium to India. In particular, the Committee was interested in whether there had been any changes to Australia's policy to only sell uranium to NPT<sup>63</sup> Party countries and where bilateral safeguards agreements are in place. A representative from the Department of Foreign Affairs and Trade informed the Committee:

The policy still remains the same. There have been no negotiations with India. In fact, a group of officials visited India earlier this year, in about May, and made it quite clear to India that there would be no question of Australia selling uranium to India given the current policy ...<sup>64</sup>

## Environmental and social concerns arising from the sale of uranium to China

4.42 A number of organisations that provided submissions to the Committee are opposed to uranium mining and the sale of uranium because of its potential negative environmental and social effects.<sup>65</sup>

4.43 In brief, opposition to the treaties for environmental reasons was raised in the relation to:<sup>66</sup>

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62 Mr Steve McIntosh, *Transcript of Evidence*, 4 September 2006, p. 32.

63 *Treaty on the Non-Proliferation of Nuclear Weapons* is aimed at preventing the spread of nuclear weapons and weapons technology to foster the peaceful uses of nuclear energy and to further the goal of achieving general and complete disarmament. NPT also establishes a safeguards system managed by the IAEA, which takes responsibility under the NPT in areas of technology transfer for peaceful purposes. IAEA, International Conventions and Agreements, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

64 Mr John Sullivan, *Transcript of Evidence*, 4 September 2006, p. 38.

65 *Submissions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 26, 27, 29, 36.*

66 *Submissions 1, 2, 3, 6, 7, 8, 11, 13, 14, 16, 17, 18, 19, 21, 22, 24, 26, 29, 36.*

- inadequate long term nuclear waste management and the risk of permanent toxic pollution
- uranium mining, transportation, building nuclear power plants and decommissioning, which causes considerable greenhouse pollution
- the potential for nuclear accidents and the negative environmental and social effects of such accidents
- persistence of radioactivity for thousands of years and the detrimental genetic effects on humans, animals and the natural environment
- the unsustainability of the nuclear industry.

4.44 Organisations were also opposed to entering into the Agreements with China because of claims that:<sup>67</sup>

- there is considerable public opposition to the treaties from Australians
- bilateral nuclear safeguards contained in the Agreements and the international nuclear safeguards system are inadequate
- China's level of accountability and transparency is poor
- the media in China is highly censored by the Government
- China has a poor human rights record
- China's occupational health and safety and labour policies are not at an acceptable standard
- China has a long history of nuclear proliferation E.g. China has previously sold stolen nuclear technology which could be used to make nuclear weapons and potentially exacerbate long standing regional conflicts to other States (such as North Korea, Iran, Pakistan, Libya and Syria).
- an increase in uranium supply to China will allow China to free-up its domestically sourced uranium for weapons production
- there are inadequate safeguards in place to stop uranium being used by China or possibly a third country (if the uranium is sold on) to manufacture weapons.

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67 Submissions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 26, 27, 29.

## China's accountability and transparency

- 4.45 A number of organisations raised particular concerns in their submissions about accountability and transparency stemming from China's system of Government and the governance mechanisms inherent in its organisations and companies.<sup>68</sup> These organisations have recommended that Australian uranium not be sold to China based on these concerns in combination with claims that the safeguards system (which provides for non-military use of uranium) is inadequate. ACF), MAPW, FOEA and People for Nuclear Disarmament Western Australia (PNDWA) provide more detail about these concerns. Safeguards concerns are discussed in more detail in Chapter 5.
- 4.46 ACF and MAPW instanced claims of China's human rights abuses constituting breaches of the *United Nations Convention Against Torture and other cruel, inhuman or degrading treatment or punishment* and the *United Nations Convention on the Rights of the Child*.<sup>69</sup>
- 4.47 In relation to the *United Nations Convention Against Torture and other cruel, inhuman or degrading treatment or punishment*, ACF and MAPW stated:
- Notwithstanding some improvements in the prosecution of perpetrators of torture, Amnesty again stated in 2006 that, "torture and ill-treatment continued to be reported in a wide variety of state institutions. In a horrifying twist, recent reports have revealed that the organs of executed political dissidents are often harvested and sold as transplants for Western customers. China has clearly breached its international treaty obligations in this instance, and has so far not been held to account for its actions."<sup>70</sup>
- 4.48 In relation to the *United Nations Convention on the Rights of the Child*, ACF and MAPW drew attention to China's one child policy and its cultural preference for male offspring resulting in the ill treatment of female offspring, and China's continuing use of child labour.<sup>71</sup>
- 4.49 In addition, China's industrial pollution and safety record is also questioned with the environmental damage and social impact caused

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68 Submissions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 26, 27, 29.

69 ACF & MAPW, Submission 26, pp. 33-34; Mr David Noonan, *Transcript of Evidence*, 5 October 2006, p. 4.

70 ACF & MAPW, Submission 26, pp. 33-34.

71 ACF & MAPW, Submission 26, pp. 33-34.

by explosions at a chemical plant owned by the China National Petroleum Corporation; and a safety failure at the Shaoguan Zinc Smelter which released ten times the acceptable level of toxic cadmium into the Biejiang River. Both incidents occurred late 2005 polluting water supplies, devastating natural ecosystems and having a negative impact on the human population.<sup>72</sup>

- 4.50 From claims of China's human rights abuses and environmental incidents and their mismanagement, ACF and MAPW have concluded that it is not certain that China can fulfil its core obligations under the Agreements, nor can the peaceful use of Australian uranium be ensured:

... the state of accountability in China means China's signed word cannot easily be trusted, they cannot effectively be monitored and held to account for their actions, and little faith can be held in the ability of internal Chinese institutions to monitor and regulate the use of Australian uranium. China will, in all likelihood, not be held to account by the nuclear safeguard agreements. Exporting a highly strategic and dangerous resource in these conditions carries a high degree of risk.<sup>73</sup>

- 4.51 FOEA shares the same view in relation to China's lack of accountability and transparency and drew attention to the media censorship in China and lack of whistleblower protection:

Repression exists across Chinese society including the energy sector. For example, police reportedly shot and killed about 20 people who were protesting the construction of a power plant in the southern city of Dongzhou in December 2005, and Chinese officials blocked the spread of information about the event. In addition to the appalling human rights record, whistleblower protections are absent. There are examples of persecution of nuclear industry whistleblowers, such as Sun Xiaodi, who was concerned about environmental contamination at a uranium mine in north-west China and was abducted in April 2005 immediately after speaking to a foreign journalist.<sup>74</sup>

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72 ACF & MAPW, Nuclear Safeguards and Chinese Accountability, *Submission 26*, p. 30.

73 ACF & MAPW, Nuclear Safeguards and Chinese Accountability, *Submission 26*, p. 37.

74 FOEA, *Submission 24*, p. 29.

- 4.52 PNDWA were also concerned about media censorship and its implications for the sale of uranium to China and stated:

there is a very severe lack of media freedom and a lack of political transparency and accountability in Chinese society. We can give an example of this. A Greenpeace campaign and communications director in Beijing, Lo Sze Ping, was questioned by Sholto Macpherson from the journal *The Diplomat* in August-September this year. Lo Sze Ping was asked something about the operation of the nuclear power program in China, and he had to say, 'I'm sorry, I will not be able to help you because this is a no-go area for NGOs'. That is just a snapshot of Chinese society. We think it does not augur well for NGOs to take actions that would expose failures in safety and in the siting of nuclear power stations.<sup>75</sup>

- 4.53 In addition, FOEA raises concerns about public safety and environmental issues around China's use of nuclear power:

There are other serious concerns in addition to the potential use of Australian uranium in Chinese nuclear weapons. Wang Yi, a nuclear energy expert at the Chinese Academy of Sciences in Beijing, told the New York Times in January 2005: "We don't have a very good plan for dealing with spent fuel, and we don't have very good emergency plans for dealing with catastrophe."<sup>76</sup>

- 4.54 ACF stated that it is relevant to the Agreements to discuss China's level of accountability:

We think it is very pertinent that China is unaccountable and that they do not have the conventional checks and balances that we take for granted in Australia. No independent parliament, no independent parties and no inquiries such as this will ever occur in China under the current government. ... with such hazardous material as nuclear material, we should not be exporting to any of them that do not have that accountability. China is the world's largest prison for journalists. Can we reasonably expect that a whistleblower in China will last long enough to be heard in Australia if they

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75 Mrs Judith Blyth, *Transcript of Evidence*, 6 October 2006, p. 19.

76 FOEA, *Submission 24*, p. 31.

wish to say that our nuclear material is not being used as it was claimed it would be under the honorary treaty?<sup>77</sup>

## Nuclear waste management

4.55 Nuclear power, the waste it creates and its management is another concern raised by a number of organisations.<sup>78</sup> Issues raised in relation to nuclear waste management are centred on the detrimental permanent effects on humans and the persistence of radioactive pollution in the physical environment.

4.56 ACF draws attention to the non-inclusion of nuclear waste management in the treaty texts of the Agreements:

Essentially, the treaty provides no information to the committee on nuclear waste management issues or on nuclear safety and nuclear power in China. It focuses almost entirely on the trade issues and the potential use of uranium in a proposed expansion of nuclear power, and it focuses on the claimed safeguards that either the IAEA or the Australian bilateral treaty would put in place. We believe there are three pillars of safeguards. Nuclear safety, nuclear waste management and proliferation should be weighted equally in considerations. They are matters that the committee should take equally into account in its considerations as to what is in Australia's national interests.<sup>79</sup>

4.57 In relation to China's nuclear waste management, the Women's International League for Peace and Freedom (Australian Section) (WILPF) have stated:

It is known that China is planning to use, or may already use, deep well injection to dispose of liquid radioactive waste. Yet, according to the School of Engineering at Vanderbilt University: "There are large uncertainties in our knowledge of the behaviour of liquid wastes in geological strata, and as a result, there is a potential for migration of substances from the place of its disposal to the accessible environment." China's injection of nuclear waste into geological strata adds to the dilemma posed by the nuclear industry's overall waste management problems. Disposal of nuclear waste in this way

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77 Mr David Noonan, *Transcript of Evidence*, 5 October 2006, p. 12.

78 *Submissions 1, 2, 3, 6, 7, 8, 11, 13, 14, 16, 17, 18, 19, 21, 22, 24, 26, 29, 36.*

79 Mr David Noonan, *Transcript of Evidence*, 5 October 2006, pp. 4-5.

creates difficulties into the future both for production of food safe for human consumption and for water supply/resources.<sup>80</sup>

- 4.58 PNDWA states that the issue of nuclear waste is an unresolved global issue:

No one country anywhere on planet Earth has yet figured out what to do with its radioactive waste, live for anything up to 250 000 years. This is a global issue, certainly, but no excuse for letting the Chinese Government, or any other proponents of nuclear power, anywhere, off the hook. Yucca Mountain, the much touted United States depository, remains unfinished, unstable, unusable. The French, the Germans, the Japanese, the British, just to mention the most frequent users/most advanced technological states, cannot figure out what to do with their nuclear waste. This is after sixty years of massive effort and billions of dollars worth of research and development money, coughed up by governments on behalf of their taxpayers.<sup>81</sup>

- 4.59 In addition, WILPF drew attention to the detrimental effects to humans and the physical environment of radioactive pollution which can result from the mismanagement of nuclear waste:

As U-238 breaks down over centuries, it creates protactinium-234, which radiates potent beta particles that may cause cancer as well as mutations in body cells that can lead to birth defects. As Drs Rosalie Bertell and Helen Caldicott have stated, these mutations in the human gene pool, unlike cancers, which affect individual persons, affect the whole future of the human species, as these mutations are permanent and virtually unchangeable for future generations.<sup>82</sup>

- 4.60 MAPW elaborates on the use of nuclear material and its serious permanent, toxic impact on the environment and states:

My final point, as a scientist and as a biologist, is that there is a conceptual issue here which is of critical importance, and that is that in large measure, in the long run, the political

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80 WILPF, *Submission 29*, p. 4.

81 PNDWA, *Submission 19*, p. 3; Mrs Judith Blyth, *Transcript of Evidence*, 6 October 2006, p. 20.

82 WILPF, *Submission 29*, p. 2; Ms Ruth Russell, *Transcript of Evidence*, 5 October 2006, p. 16.

complexion or nature of the regime in Australia or in China matters little at the time that a safeguards agreement might be concluded and nuclear exports might subsequently follow. Once the genie is out of the bottle in terms of these materials then they persist, are hazardous and are potentially usable in weapons for time frames that are simply beyond those for which any human institution has persisted. I remind the committee that the half-life of plutonium-239 is 24,400 years and that the half-life of uranium-235 is 713 million years. Human writing has only been in existence for 5,000 years. There is no human institution that has survived more than a couple of thousand years. We simply cannot guarantee what the capacity will be socially and politically to manage these materials once they are made available.<sup>83</sup>

- 4.61 Another issue of importance in discussion on nuclear waste management is the reprocessing of uranium for further use and its detrimental effects on the natural environment. The Committee received evidence that there is a current global stockpile of 270 tonnes of plutonium separated at reprocessing plants, which is enough to build around 27 000 nuclear weapons. Reprocessing of uranium is considered environmentally dirty and less than satisfactory by at least one director of the World Nuclear Association but under the Agreements reprocessing is permitted.<sup>84</sup> FOEA recommends that reprocessing be removed from the treaty text:

... if reprocessing is environmentally dirty in France and the UK according to the World Nuclear Association, what on earth is it going to be like in China? It is unnecessary because most of the plutonium and uranium is simply not reused. The draft treaty text goes in completely the opposite direction and essentially gives blanket or programmatic approval for reprocessing. That ought to be removed from the treaty text. If at some later date there was a case for reprocessing then it could be revisited, but there is certainly not a case for reprocessing at the moment. So that provision in the treaty should be removed or a watered-down version of that recommendation should be considered – programmatic

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83 Dr Tilman Ruff, *Transcript of Evidence*, 25 October 2006, p. 13.

84 Mr David Noonan, *Transcript of Evidence*, 5 October 2006, p. 14; Dr Jim Green, *Transcript of Evidence*, 25 October 2006, p. 9.



approval could be changed to case-by-case approval, which used to be Australian government policy.<sup>85</sup>

- 4.62 In response to concerns raised by organisations in relation to China's waste management practices, ASNO stated:

China has recently joined the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* and therefore its waste practices and policies will become subject to international scrutiny. China's nuclear waste management program takes into account its entire fuel cycle mix and nuclear fuel inventory from all sources. It is not required to manage waste or spent fuel from AONM any differently from that of other origins so long as AONM is dealt with in accordance with the Nuclear Material Transfer Agreement and IAEA safeguards.<sup>86</sup>

- 4.63 In addition, ASNO provided that in 1994, China constructed the Lanzhou Nuclear Complex, a centralised store for civil Spent Fuel (SF) with an initial capacity of 550 tonnes. For reprocessing, China has a growing inventory of spent fuel and proposes to recycle the fissile content of large quantities of SF. In 1998, in the Lanzhou Nuclear Complex, at the same site as the centralised SF store, construction of a pilot civil processing plant began. The plant has a planned capacity of 50 tonnes SF per year. In addition to this plant, a larger reprocessing plant with a capacity of up to 800 tonnes of SF per year is also being constructed to be completed by 2020.<sup>87</sup>

- 4.64 ASNO states that China also has waste repositories for the disposal of low level waste and intermediate level waste operating in the northwest of China:

China plans to vitrify high-level waste (HLW) arising from reprocessing and to dispose of this HLW in a geological repository at a depth of 500 metres. The candidate site at Beishan, located in the Gobi Desert, was selected in a process that began in 1986 by considering 21 different districts in China. This site is currently being further assessed, and it is

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85 Dr Jim Green, *Transcript of Evidence*, 25 October 2006, p. 10.

86 ASNO, *Submission 30*, p. 6.

87 ASNO, *Submission 30*, p. 6; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 37.

expected that licensing will start in 2020 with operation to begin around 2040.<sup>88</sup>

4.65 ASNO informed the Committee that China's level of nuclear planning was developing and improving as new technology becomes available:

... there is a state of flux, if you like, in nuclear planning generally because of the development of new technologies and particularly the boost that this is being given by the US GNEP initiative – the Global Nuclear Energy Partnership – which is bringing together a number of technology developments from several countries and promoting a way of recycling plutonium that avoids some of the proliferation risks associated with reprocessing and also shortens the lifespan of high-level waste. China is following these developments very closely. I was talking with a Chinese expert on this a week ago today, in fact, in Korea. He told me that, although they have a plan to bring a reprocessing plant onstream around 2020, they have not taken any final decision on the technology that they would be following. It could well be that they will go in the direction of these new recycling technologies rather than established technology. As Mr McIntosh said, given that their program is quite new and growing, they are really at a stage with their forward thinking which is pretty much as any country would be in similar circumstances. I do not think that suggests there is a lack of a plan and that there is some sort of safety question mark; it is rather that these things are very long term.<sup>89</sup>

## Energy alternatives to nuclear power

4.66 Many of the organisations and individuals opposed to uranium mining and to the Agreements advocated the use of alternative energy options that are environmentally sustainable (unlike coal fired power generation).<sup>90</sup>

4.67 ACF stated that China and India are the only two countries in the world with proposed major nuclear power expansion. Several

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88 ASNO, *Submission 30*, p. 6.

89 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 37.

90 *Submissions 6, 13, 15, 17, 22, 24, 27, 36*; Mr David Noonan, *Transcript of Evidence*, 5 October 2006, p. 4; Ms Ruth Russell, *Transcript of Evidence*, 5 October 2006, pp. 17-19.

European countries have phase-out policies. ACF advocated that Australia help China to find alternative methods of energy production such as solar, wind and energy efficient initiatives that are sustainable.<sup>91</sup>

- 4.68 ACF added that there is considerable economic benefit from selling renewable energy to China without the worry of creating nuclear waste:

If you are looking at Australia's national interests – and there has been a focus, without disrespect, on economic and trade matters in this uranium sales proposal – ASNO made clear to you that the value of Australian uranium exports to China might be some \$250 million a year by 2020. A company from Tasmania – the Roaring Forties – has recently sold three wind farms to China valued at \$300 million. That is one renewable sale worth more than the maximum in accrued uranium sales to China that may be realised within 15 years. If the Australian community, the commercial world and government, with respect, gave fulsome support to the renewables industry, we could be gaining far greater access to the Chinese market – the 15 per cent mandatory renewable energy renewables market – and far greater innovation, job creation and export value for Australia than ever can be realised at the maximum extent of the nuclear power expansion there through uranium sales.<sup>92</sup>

- 4.69 FOEA believes that Australia should encourage China to adopt safer alternative energy production, instead of nuclear power, which also does not contribute to greenhouse gas emissions:

Australia ought to encourage the Chinese regime to abandon the nuclear expansion and to increase the renewable target to 17% or more. There are various mechanisms to facilitate this course of action-the Clean Development Mechanism of the Kyoto Protocol, the AP6 Climate Change Framework, bilateral relations, export industry support, etc. The argument about Australian uranium reducing greenhouse emissions conflicts with the drug dealer's defence.<sup>93</sup> If the only

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91 Mr David Noonan, *Transcript of Evidence*, 5 October 2006, pp. 8-9.

92 Mr David Noonan, *Transcript of Evidence*, 5 October 2006, p. 8.

93 The drug dealer's defence applied to the sale of uranium to China provides that if Australia does not sell uranium to China, China will source its uranium from another uranium producing country. FOEA, *Submission 24*, p. 31.

consequence of a refusal to supply uranium to China was that other suppliers would fill demand, then refusal to supply uranium would not increase greenhouse emissions even if the reference point is coal fired electricity plants.<sup>94</sup>

- 4.70 Future Directions International (FDI) believes that the Agreements represent an opportunity for Australia to shape changing global energy patterns and requirements, securing its prosperity and security.<sup>95</sup>
- 4.71 FDI advocates the use of thorium reactors, which overcome the use of uranium and sideline much of the debate in relation to misuse of uranium intended for energy generation.<sup>96</sup> Further, thorium reactors are considered environmentally compatible as they pollute less than any other major form of power generation and Australia is resource rich in Thorium with 25 per cent of the world's reserve. FDI proposed including thorium in addition to uranium in the treaty texts of the Agreements.<sup>97</sup>
- 4.72 FOEA however, offered the opposing view stating that thorium may be converted to fissile material and used to manufacture weapons if desired:

I was at a meeting at UNSW last week and Dr Reza, Australia's most prominent champion of thorium reactors, was there. In his presentation he said that for conventional reactors you need safeguards but that thorium reactors are proliferation-proof because after five years the isotopic ratio is entirely unsuitable for weapons use. In the discussion period I pointed out that a would-be proliferator would not irradiate the material for five years and that thorium is converted indirectly to uranium-233, which is a fissile material with safeguards broadly equivalent to highly enriched uranium and plutonium. A significant quantity is eight kilograms and conversion times are measured in weeks to months, depending on the form of the uranium-233. I pointed out that the US has successfully tested a bomb using a U-233 core and he was speechless. He did not want to defend thorium against those points of fact.<sup>98</sup>

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94 FOEA, *Submission 24*, p. 31s.

95 FDI, *Supplementary submission 28.1*, p. 1.

96 FDI, *Supplementary submission 28.1*, p. 1.

97 FDI, *Submission 28*, p. 4; Mr Craig Lawrence, *Transcript of Evidence*, 6 October 2006, p. 10.

98 Dr Jim Green, *Transcript of Evidence*, 25 October 2006, p. 9.



# Safeguarding the use of Australian Uranium

## Introduction

- 5.1 Australian Government policy limits supply of Australian Obligated Nuclear Material (AONM)<sup>1</sup> to countries with which Australia has bilateral safeguards agreements and detailed Administrative Arrangements in place.<sup>2</sup> The Agreements under review include safeguards to allow for the transfer of AONM and the cooperation in the peaceful use of nuclear technology.
- 5.2 Chapter 5 provides discussion on whether the safeguards included in the Agreements are adequate to ensure the non-military<sup>3</sup> use of AONM and the peaceful use of nuclear technology. Other issues arising during the course of the inquiry, relating to the International Atomic Energy Agency's nuclear safeguards system are also included.

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1 AONM is defined in the Nuclear Material Transfer Agreement as Australian uranium and nuclear material derived from it. E.g. Plutonium.

2 Regulation Impact Statement (RIS), p. 1.

3 Military use, which is not permitted, includes: any direct military application of nuclear energy such as nuclear weapons, military nuclear reactors, production of tritium for military purposes, military nuclear propulsion and depleted uranium munitions. RIS, p. 2.

## The IAEA's nuclear safeguards system

### The International Atomic Energy Agency

5.3 The International Atomic Energy Agency (IAEA) is a United Nations organisation created in 1957. The IAEA is an independent, intergovernmental science and technology-based organisation tasked with promoting safe, secure and peaceful global cooperation in nuclear technologies. The IAEA also helps its member states in planning and using nuclear science and technology for peaceful purposes including the generation of electricity. In addition, the IAEA is charged with developing nuclear safety standards and verifying through its inspection system that member States comply with their commitments under the *Treaty on the Non-Proliferation of Nuclear Weapons* (NPT) and other non-proliferation agreements. These agreements provide for the peaceful use of nuclear material and facilities.<sup>4</sup>

### Treaty on the Non-Proliferation of Nuclear Weapons

5.4 The system of international nuclear safeguards is created by the NPT. In addition, there are two other treaty level agreements which also provide for the non-proliferation of nuclear weapons and technology, the *Treaty for the Prohibition of Nuclear Weapons in South America* (the Treaty of Tlatelolco) and the *South Pacific Nuclear Free Zone Treaty* (the Treaty of Rarotonga).<sup>5</sup>

5.5 The 1968 NPT, was a response to the growing international concern about the use of nuclear weapons and technology. NPT entered into force in March 1970 with over 150 member countries. NPT is premised on preventing the spread of nuclear weapons and technology and promotes the peaceful, non-military use of all nuclear material and technology.<sup>6</sup> NPT includes:

- Article II which provides that each non-nuclear weapon state that becomes a Party to the NPT agrees not to acquire nuclear weapons or other nuclear explosive device.

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4 IAEA, viewed 26 October 2006, <[www.iaea.org](http://www.iaea.org)>; Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 20.

5 IAEA, *Origin of comprehensive safeguards agreements*, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

6 IAEA, *International Conventions and Agreements*, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

- Article III which provides that each non-nuclear weapons state (party to the NPT) conclude a comprehensive safeguards agreement with the IAEA for peaceful nuclear activities for the present and into the future.
  - Article IV which provides that Parties may participate in the exchange of equipment, materials, scientific and technological information for peaceful uses of nuclear energy.
  - Article VI which provides for Parties to pursue negotiations in 'good faith' towards nuclear disarmament.<sup>7</sup>
- 5.6 NPT limits the number of declared nuclear weapon states to five and currently includes all five of the declared nuclear weapon states of China,<sup>8</sup> France, the Russian Federation, the United Kingdom of Great Britain and the United States of America.<sup>9</sup> Although declared nuclear-weapon states are not obliged to conclude safeguards agreements with the IAEA, they have agreed that IAEA safeguards may be applied to all or part of their civil nuclear activities. Nuclear-weapon states have agreed to this to confirm 'that they will not derive any commercial advantage by not making their civil facilities subject to international inspection.'<sup>10</sup>
- 5.7 As well as the NPT, the Treaty of Tlatelolco and the Treaty of Rarotonga also require member countries to conclude comprehensive safeguards agreements with the IAEA and that any nuclear material held or subsequently acquired be declared and submitted to safeguards.<sup>11</sup>

### Verification measures included in the IAEA's nuclear safeguards system

- 5.8 Verification measures are designed to assess a member State's declared nuclear material and nuclear material related activities. Verification includes: on site inspections,<sup>12</sup> visits and ongoing

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7 IAEA, *Origin of comprehensive safeguards agreements*, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

8 China acceded to the NPT on 9 March 1992. IAEA, *Nuclear Non-Proliferation: Chronology of Key Events*, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

9 Fisher, David, *History of the IAEA: The First Forty Years*, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

10 IAEA, *Origin of comprehensive safeguards agreements*, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

11 IAEA, *Origin of comprehensive safeguards agreements*, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

12 These include: ad hoc, routine, special and safeguards inspections and visits.



monitoring and evaluation. The IAEA uses two types of verification measures:

- One verifies State reports of declared nuclear material and activities. These measures (as included under NPT) are based on nuclear material accountancy in addition to containment, surveillance techniques i.e. tamper proof seals, and IAEA installed cameras at monitored facilities.
- The other measure is designed to strengthen the IAEA's inspection capability (as provided by the Additional Protocol to the Safeguards Agreement). The measure allows the IAEA to 'verify the non-diversion of declared nuclear material and provides assurances of the absence of undeclared nuclear material and activities within a State.'<sup>13</sup>

### Additional Protocol to Safeguards Agreements

5.9 The Additional Protocol to Safeguards Agreements is a legal document that came into existence in May 1997 and allows the IAEA to implement measures to strengthen its existing nuclear safeguards system. The Additional Protocol was conceived in response to the discovery of Iraq's clandestine nuclear weapons program, in addition to other developments in the early 1990s and focuses on a verification system for undeclared nuclear material and activities.<sup>14</sup>

5.10 Under the Nuclear Safeguards System, routine inspections were limited to specific 'strategic points' in declared facilities. With the Additional Protocols, a State must provide access to all places where there is, or may be activity related to the nuclear fuel cycle. Where access is not possible, the State must immediately make reasonable effort to satisfy IAEA requirements through other means.

5.11 Specifically, the Additional Protocol provides for:

- Information about, and access to, all aspects of a state's nuclear fuel cycle, from uranium mines to nuclear waste and any locations where nuclear material intended for non-nuclear uses is present
- Inspections at short notice to all buildings on a nuclear site

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13 IAEA, IAEA Safeguards Overview: Comprehensive Safeguards Agreements and Additional Protocols, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

14 IAEA, Non-Proliferation of Nuclear Weapons and Nuclear Security: IAEA Safeguards Agreements and Additional Protocols, May 2005, p. 6, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

- Information on the manufacture and export of sensitive nuclear technologies and inspection mechanisms for manufacturing and import locations
  - Access to other nuclear-related locations
  - Collection of environmental samples outside of declared locations as required.<sup>15</sup>
- 5.12 The Additional Protocol also provides for improved administrative procedures including streamlined procedures for designating inspectors and providing them with visas.<sup>16</sup>
- 5.13 China signed onto the Additional Protocols on 31 December 1998 and the Additional Protocols entered into force for China on 28 March 2002.<sup>17</sup>

## **Australia's network of nuclear safeguards agreements**

- 5.14 Australia has 19 bilateral safeguards<sup>18</sup> agreements in place providing for the transfer of AONM<sup>19</sup> to 36 countries, including Taiwan.<sup>20</sup>
- 5.15 Australia's bilateral safeguards agreements provide assurances that AONMs is used solely for peaceful purposes and not diverted to nuclear weapons or for other military purposes. These agreements complement the IAEA's nuclear safeguards system to ensure the peaceful non-explosive use of nuclear material derived from
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15 IAEA, IAEA Safeguards: Stemming the Spread of Nuclear Weapons, viewed 8 November 2006, <[www.iaea.org](http://www.iaea.org)>.

16 IAEA, Non-Proliferation of Nuclear Weapons and Nuclear Security: IAEA Safeguards Agreements and Additional Protocols, May 2005, p. 6, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

17 IAEA, Safeguards and Verification: Strengthened safeguards system: Status of Additional Protocols, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

18 Australia's safeguards agreements are with: the Republic of Korea, the United Kingdom of Great Britain, Finland, the United States of America, Canada, Sweden, France, Euratom (European Atomic Energy Community), Philippines, Japan, Switzerland, Egypt the Russian Federation, Mexico, New Zealand, Czech Republic, the United States of America (covering Taiwan), Hungary and Argentina. NIA Attachment. In addition, Australia has an NPT safeguards Agreement with the International Atomic Energy Agency, concluded on 10 July 1974. Australia also has an Exchange of Notes Constituting an Agreement with Singapore Concerning Cooperation on the Physical Protection of Nuclear Materials, which entered into force on 15 December 1989.

19 AONM refers to uranium and nuclear material derived from it. E.g. plutonium. National Interest Analysis (NIA), para. 10.

20 National Interest Analysis (NIA), para. 10.

Australia. The safeguards included in the Agreements also reiterate Australia's nuclear non-proliferation security interests. These bilateral agreements include IAEA safeguards prescribed by NPT and supplemented by separate safeguards agreements between each State concerned and the IAEA, for the full life of AONM.<sup>21</sup> In addition, Australia has been Party to the Additional Protocols since 12 December 1997.<sup>22</sup>

- 5.16 Complementary to the IAEA prescribed safeguards, Australia also includes in its bilateral safeguards agreements an Administrative Arrangement (AA) that details how each Party will meet its obligations under the safeguards agreement.<sup>23</sup>

### Safeguards included in the Nuclear Material Transfer Agreement

- 5.17 The Nuclear Material Transfer Agreement is modelled on Australia's existing nuclear safeguards agreements with other NPT nuclear-weapon states, and includes all of the Australian Government's policy requirements for the control of nuclear materials. Specifically:
- Article V assures that AONM supplied to China will be used exclusively for peaceful purposes and will not contribute to the manufacture of nuclear explosive devices, research or development of nuclear weapons or for any military purpose
  - Articles IV and VI assure that AONM supplied to China will be subject to China's safeguards agreement with the IAEA for the full life of the material or until safeguards are terminated in accordance with that agreement
  - Article VII provides for alternative safeguards that will apply in the event that IAEA safeguards no longer apply
  - Article VIII assures that adequate and effective physical protection measures are applied to all AONM during use, storage and transport
  - Article IX requires prior Australian consent for any transfer of AONM to a third party, any enrichment to 20 per cent or more in the isotope uranium-235, or reprocessing of AONM
  - Article X provides for the conclusion of detailed Administrative Arrangements setting out accounting and reporting procedures

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21 NIA, para. 10.

22 IAEA, *Safeguards and Verification: Strengthened safeguards system: Status of Additional Protocols*, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

23 ASNO, *Exhibit 11, A Guide to Administrative Arrangements*, p. 1.

on AONM between the Australian Safeguards and Non-Proliferation Office (ASNO) and its Chinese equivalent, the China Atomic Energy Authority (CAEA).<sup>24</sup>

- 5.18 The Committee was also informed that China's other nuclear material suppliers – Namibia and Kazakhstan, do not have in place the same level of safeguards that Australia does. ASNO informed the Committee:

The difference between Namibia and Kazakhstan and a number of other uranium suppliers and Australia and countries like Australia that have similar policies, namely the United States and Canada, is that those countries do not require that their uranium be identified as such and be subject to any kind of bilateral undertaking. Both Kazakhstan and Namibia have what is called a peaceful use requirement. They sell the uranium against a pledge by the recipient that the uranium will be used for peaceful use only, but there is not a formal agreement structure that tracks the uranium and checks that that commitment is honoured.<sup>25</sup>

### Administrative Arrangements

- 5.19 The Administrative Arrangements (AAs) are a confidential, less than treaty status document included in Australia's bilateral safeguards agreements. The AAs describe how both Parties will undertake to fulfil the obligations contained in the bilateral safeguards agreement. The AAs are drafted in accordance with IAEA safeguards and to avoid duplication, the AAs use the IAEA's accounting system, but include set procedures by which material included under the corresponding agreement can be identified (country of origin may be traced).<sup>26</sup>
- 5.20 The AAs apply to nuclear material, material, equipment and technology transferred between Parties. The requirements included in the AAs apply to both Parties and ensure the transfer of material and or equipment and tracking within the recipient's fuel cycles. Once, AONM has been converted into a usable form it becomes subject to IAEA safeguards and inspection activities become responsible for ensuring that nuclear material is used for peaceful purposes.<sup>27</sup>

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24 NIA, para. 11; RIS, pp. 3-4.

25 Mr John Carlson, *Transcript of Evidence*, 25 October 2006, p. 31.

26 ASNO, *Exhibit 11*, A Guide to Administrative Arrangements, p. 1.

27 ASNO, *Exhibit 11*, A Guide to Administrative Arrangements, pp. 1-2.

- 5.21 For the transfer of nuclear material and technology to take place between Australia and China, and in addition to ratification of the Agreements, ASNO, the Australian Nuclear Science and Technology Organisation (ANSTO) and CAEA must conclude:
- an AA which includes safeguards and accounting requirements
  - pursuant to Annex B, a list of eligible facilities must be identified for inspections and monitoring
  - for the Nuclear Cooperation Agreement, a written specific instrument between cooperating Parties must be concluded before any collaboration projects begin.<sup>28</sup>
- 5.22 ASNO would have responsibility for administration and accounting for all uranium exports. ASNO and ANSTO would together be responsible for requirements under the Nuclear Cooperation Agreement.<sup>29</sup>

## Monitoring China's AONM and nuclear technology use

### China's compliance with the IAEA's nuclear safeguards system

- 5.23 The IAEA provides that since 1982, China has emulated the laws and regulations relating to nuclear safety as they apply in advanced nuclear power countries, consulted IAEA nuclear safety codes and guides establishing its own nuclear safety regulations system. China's nuclear safety regulation system consists of laws, administrative regulations of the State Council, department rules, nuclear safety guides, standards and specifications.<sup>30</sup>
- 5.24 In accordance with China's nuclear material safeguards agreement with the IAEA and procedures under the Agreements, monitoring of AONM would be based on procedures applied at the facilities where AONM is handled. ASNO would check reports on AONM provided by China for consistency with information from the IAEA and from other sources. While China would have the right to choose which facilities are eligible for IAEA inspections under its agreements with the IAEA, any facilities using AONM must be jointly agreed by

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28 RIS, p. 7.

29 RIS, p. 7.

30 IAEA, People's Republic of China, viewed 1 November 2006, <[www.iaea.org](http://www.iaea.org)> , p. 226.

ASNO and the CAEA, and must be subject to the China-IAEA nuclear material safeguards agreement.<sup>31</sup>

### Tracking AONM in China

- 5.25 ASNO's *A Guide to Administrative Arrangements* provides that the system of accountancy and control established under AAs enables Parties to account for AONM as it moves through the nuclear fuel cycle after it is exported in its raw form from Australia.<sup>32</sup>
- 5.26 The system of accountancy does this through the principles of proportionality and equivalence. These principles recognise that uranium atoms regardless of origin are indistinguishable. The proportionality principle provides that a recipient country can track AONM through its fuel cycle by attributing a quantity of uranium hexafluoride as being AONM in the same proportion as the original quantity of AONM before conversion. Processing losses are accounted for in the same way.<sup>33</sup>
- 5.27 Equivalence does not allow for substitution of lower quality material to be included as material that is subject to the Agreement. Reports are regularly exchanged between Parties to enable each Party to account for all nuclear material subject to the Agreement. Reports are updated as material arrives, departs or changes form and takes into account all inventory increases and decreases.<sup>34</sup>

### Concerns about inadequate safeguards

- 5.28 The following concerns relating to the IAEA's international nuclear safeguards system and Australia's nuclear safeguards under the Agreements were raised. In particular, concerns were centred on how the Australian Government can ensure that AONM is used only for peaceful purposes by China and not diverted to make nuclear weapons. The concerns are listed below:
- The AAs are not publicly available and so not open to scrutiny
  - IAEA safeguards are inadequate and not applied equally to all countries (declared nuclear weapon states' are not subject to the same IAEA safeguards requirements)

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31 NIA, para. 13.

32 ASNO, *Exhibit 11*, *A Guide to Administrative Arrangements*, pp. 1-2.

33 ASNO, *Exhibit 11*, *A Guide to Administrative Arrangements*, pp. 1-2.

34 ASNO, *Exhibit 11*, *A Guide to Administrative Arrangements*, p. 2.

- Application of international safeguards to the China nuclear industry is more symbolic than real and cannot deliver the required levels of transparency and certainty that AONM will be used for peaceful purposes
- AONM can not be tracked under the Agreement, rather an equivalent amount of nuclear material is tracked
- IAEA inspections process is not effective as facilities are decided before inspections take place
- China has inadequate emergency measures in place to deal with nuclear emergencies/incidents
- Inadequate safeguards would lead to China using AONM to manufacture nuclear weapons or at best, increased nuclear material allows China to free up its domestic uranium to manufacture nuclear weapons
- The possibility of weapons manufacture by a declared nuclear weapons state could exacerbate existing regional tensions.

### Concerns about tracking AONM in China

- 5.29 FOEA makes the claim that all of Australia's uranium exports to China could be used in nuclear weapons without breaching the terms of the agreement as long as an equivalent amount of nuclear material is transferred into safeguards, as safeguards do not apply to conversion facilities. The Australian Conservation Foundation (ACF), the Medical Association for the Prevention of War (Australia) (MAPW) and the Women's International League for Peace and Freedom (Australian Section) (WILPF) reiterate this view.<sup>35</sup>
- 5.30 ASNO responded to this claim and stated that an equivalent amount of uranium is tracked and that the outcome is the same as if AONM has been tracked through the conversion plant:

Under traditional IAEA practice, conversion facilities are before the "starting point" for safeguards inspection procedures. Furthermore, as safeguards do not apply to "atoms", there is no way of identifying individual atoms as being "Australian." As soon as uranium from Australia is mixed with uranium from other sources in conversion and

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<sup>35</sup> ACF & MAPW, *Submission 26*, p. 6; Mr David Noonan, *Transcript of Evidence*, 5 October 2006, pp. 2-3; Ms Ruth Russell, *Transcript of Evidence*, 5 October 2006, p. 18.

other processes, its “national identity” is lost, and the principles of equivalence and proportionality apply to determine which batches of nuclear material are identified as being subject to the Agreement. The Nuclear Transfer Agreement requires that on receipt of Australian uranium in China, an equivalent quantity of uranium in the form of uranium hexafluoride will be added to the inventory of a facility designated for safeguards – e.g. an enrichment plant. The practical effect will be exactly the same as if the uranium had been tracked through the conversion plant.<sup>36</sup>

### Concerns about verification measures and procedures

5.31 Concerns were also raised about the effectiveness of IAEA verification procedures. In particular, the Committee was informed that ASNO does not make public any findings of Material Unaccounted For (MUF).

5.32 Further concerns were raised that only three facilities are included under the IAEA’s list of agreed facilities for inspection.<sup>37</sup>

5.33 ASNO responded that there are more than three facilities included:

No, that is not correct. I have not got in my head the full number of facilities that are on the IAEA list, but it includes the two Russian supplied centrifuge enrichment plants plus all foreign supplied power reactors, so from France, Canada, and Japan. So there are several facilities currently on the eligible facility list.<sup>38</sup>

5.34 ASNO confirmed that ten facilities are included and explained how facilities are included on the list of facilities eligible for IAEA inspections:

Before any nuclear facility in China can be eligible to use, process or store AONM it must be included in the list of facilities eligible for IAEA safeguards, and must also be included on the Delineated Nuclear Fuel Cycle (Capsule) agreed between ASNO and CAEA, in accordance with Annex B of the Nuclear Material Transfer Agreement. Neither party can unilaterally add or remove a facility from the Capsule. The facilities that China has offered for the application of

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36 ASNO, *Submission 30*, p. 3.

37 MUF is where an accounting discrepancy has been found. FOEA, *Submission 24*, p. 11.

38 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, p. 26.



IAEA safeguards included French/UK, Canadian and indigenous power reactors, a research reactor and two enrichment facilities. Australia has no information on China's plans to add to these facilities.<sup>39</sup>

### Concerns about diversion of AONM for nuclear weapons manufacture and the impact on regional stability

- 5.35 A number of organisations and individuals raised concerns in relation to China's potential use of AONM to either divert it to manufacture nuclear weapons or to free up its domestic uranium supplies for the same purpose and the impact this would have on existing regional tensions.<sup>40</sup> These concerns are mixed with concerns about China's breaches of the NPT<sup>41</sup> and that China has not ratified the *Comprehensive Nuclear Test Ban Treaty (CTBT)*.<sup>42</sup>
- 5.36 In addition, several submissions drew attention to comments made by China's Ambassador to Australia, Madame Fu Ying at a Melbourne Mining Club luncheon in December 2005<sup>43</sup> where the Ambassador stated that China has insufficient uranium for both its civil and military nuclear program. As the Anti-Nuclear Alliance of Western Australia (ANAWA) and ACF stated, this has sparked concerns that by providing uranium for China's civil programs, Australia frees-up China's limited domestic uranium reserves for military use.<sup>44</sup>
- 5.37 In relation to China's past NPT breaches, ASNO stated that China has improved upon its past proliferation record since it joined the NPT in 1992 and became obligated under the treaty to not assist any non-nuclear weapons state to manufacture or acquire nuclear weapons:

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39 ASNO, *Submission 30*, p. 1.

40 Ms Ruth Russell, *Transcript of Evidence*, 5 October 2006, p. 18; Mrs Judith Blyth, *Transcript of Evidence*, 6 October 2006, p. 18.

41 *Treaty on the Non-Proliferation of Nuclear Weapons* is aimed at preventing the spread of nuclear weapons and weapons technology to foster the peaceful uses of nuclear energy and to further the goal of achieving general and complete disarmament. NPT also establishes a safeguards system managed by the IAEA, which takes responsibility under the NPT in areas of technology transfer for peaceful purposes. IAEA, International Conventions and Agreements, viewed 6 November 2006, <[www.iaea.org](http://www.iaea.org)>.

42 The CTBT was opened for signature in September 1996 and prohibits nuclear tests and explosions by member states. CTBT has been ratified by 136 countries of the 176 that are signatories. Preparatory Commission for the Comprehensive Test Ban Treaty Organization, viewed 7 November 2006, <<http://pws.ctbto.org/>>.

43 ANAWA, *Submission 27*, p. 4; ACF & MAPW, *Submission 26*, p. 7.

44 ANAWA, *Submission 27*, p. 4; Mr David Noonan, *Transcript of Evidence*, 5 October 2006, p. 3; Mr James Courtney, *Transcript of Evidence*, 6 October 2006, pp. 3-5.

There have been no findings by the IAEA or NPT Parties at NPT Review Conferences of non-compliance by China with its NPT obligations, or by Nuclear Supplier Group (NSG) members that China has not complied with NSG guidelines.<sup>45</sup>

5.38 ACF responded to the information put forward by ASNO:

I think it is directly contradicted by, for instance, the Cox report from the US Senate, which states in its conclusions that China's actions in the proliferation of material and technology for weapons of mass destruction posed a direct threat to the US and to its friends and allies. That was in 1999. More recently, the US government have censured a number of Chinese companies and entities for what they said were proliferation breaches of military and other weapons of mass destruction technology. China is, we believe, directly responsible for what they claim to be separate companies and entities. Particularly in an authoritarian state those entities do not exercise a freedom of manoeuvre outside of the interests and the will of the Chinese government.<sup>46</sup>

5.39 ACF puts forward the view that the possibility of China's diversion of AONM for military purposes is because of inadequate safeguards and that China's civil and military nuclear industries are both managed by China's military.<sup>47</sup>

5.40 ASNO provided evidence to the Committee that the Australian Government is confident that China takes its obligations under the NPT and membership of the nuclear export control regimes seriously.<sup>48</sup>

5.41 ASNO added that in addition to IAEA safeguards, Australia was relying on trust that AONM would not be diverted to non-peaceful uses by China and that China had no reason to divert AONM to other than its intended purpose:

Obviously, there is a degree of trust in any international treaty, but the trust is underpinned by fairly rigorous procedures. Australian uranium will only be going into civil facilities which are covered by the IAEA safeguards agreement. There is no process by which China would divert

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45 ASNO, *Submission 30*, p. 5.

46 Mr David Noonan, *Transcript of Evidence*, 5 October 2006, p. 4.

47 Mr David Noonan, *Transcript of Evidence*, 5 October 2006, p. 5.

48 ASNO, *Submission 30*, p. 5.

our material from those facilities and, as I said earlier, there is no reason that it would seek to do so.<sup>49</sup>

5.42 ACF recommends that in view of inadequate safeguards that there should not be any provision for enrichment or reprocessing facilities under the Agreements. ACF reiterated the threat of nuclear arms races and the need to stop providing nuclear material for armament.<sup>50</sup>

5.43 ANAWA shared this view and added that the Australian Government is side-stepping the issue of China's past nuclear proliferation record:

Our government's fear of upsetting the Chinese or damaging economic prospects is leading to a situation that is going to be looked back on in future as a very damaging thing to Australia's national interest and security, not to mention the destabilisation of Asia. If North Korea tests a weapon, I think we are going to see a rapid rollout of proliferation in that region. I will not get started on Japan's program at this point, but it is clear that that region is teetering on the brink of a burst of nuclear weapons expansion.<sup>51</sup>

5.44 ASNO argued that by including China as one of its bilateral safeguards partners Australia was strengthening nuclear safeguards.

Australia maintains a regular dialogue with China on arms control and non-proliferation issues. The safeguards agreements with China will provide further impetus to develop this dialogue. The agreements support the objective of promoting the application of best practice nuclear safeguards and security in China. They provide the basis for coverage of a substantial proportion of nuclear material in use in China by Australia's strict nuclear safeguards and security arrangements. More generally, adding China to Australia's network of bilateral safeguards partners provides the basis for a substantial increase in the proportion of nuclear material in international use that is covered by Australia's strict safeguards requirements.<sup>52</sup>

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49 Mr John Carlson, *Transcript of Evidence*, 4 September 2006, pp. 27-28.

50 Mr David Noonan, *Transcript of Evidence*, 5 October 2006, p. 5.

51 Mr James Courtney, *Transcript of Evidence*, 6 October 2006, p. 4.

52 ASNO, *Submission 30*, p. 4.

## Concerns about Administrative Arrangements

5.45 Concerns were raised about the confidentiality attached to AAs that will apply to the bilateral safeguards included in the Agreements. In particular, that AAs are confidential on the request of bilateral partners ahead of due process and transparency in Australia. ACF and MAPW stated:

... it is contrary to the proper exercise of public and Parliamentary scrutiny of the proposed treaty, and an unacceptable practice of secrecy by ASNO, to fail to make public the key “Administrative Arrangements” to enact the Australian bilateral safeguards agreement in China. Without this public access no one can independently know if the proposed practice of safeguards can match the claims. Or if the ASNO accounting practices of ‘equivalence’ and of ‘proportionality’ are to be credibly or otherwise applied to Australian Obligated Nuclear Materials in China.<sup>53</sup>

5.46 ASNO responded to concerns about AAs stating that it was practice for AAs to be confidential:

... under all of Australia’s bilateral agreements Administrative Arrangements are less-than-treaty-level, establishing working-level arrangements between ASNO and its counterpart in the country concerned (in this case, the China Atomic Energy Authority). In accordance with long-standing practice, at the request of a number of ASNO’s counterparts, Administrative Arrangements are treated as being confidential between the parties.<sup>54</sup>

5.47 ASNO also informed the Committee that the Australia/China AAs are almost entirely agreed upon and will be concluded by the end of 2006.<sup>55</sup>

## China’s nuclear emergency procedures and occupation health and safety

5.48 The Committee was concerned about information it received that China does not have a system in place for adequate emergency planning to deal with nuclear emergencies.

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53 ACF & MAPW, *Submission 26*, p. 5.

54 ASNO, *Submission 30*, p. 3.

55 ASNO, *Submission 30*, p. 3.

5.49 ANSTO informed the Committee that China is not complacent about its emergency planning:

National reports under the Convention on Nuclear Safety describe in some detail the current situation regarding safety of nuclear power reactors in the country concerned, and also contain a section looking forward to planned activities to further improve safety in the coming years. China's most recent National Report (2005) contained significant information about their current emergency planning, covering basic requirements for emergency preparedness, the specific measures in place, training and exercises for emergency preparedness, progress for emergency preparedness activities and international arrangements. The report indicated that this is an issue that they take very seriously, and that a range of improvements had been implemented over the period since the 2002 Review Meeting. Under the "looking forward" section, they described further actions that they would take in the near future. We do not see this as an admission that current processes are inadequate—rather, an indication that they are not complacent.<sup>56</sup>

### Concerns about the IAEA's safeguards system

5.50 Concerns about inadequacies in elements of the IAEA's safeguards system consisting of the NPT and Additional Protocols includes tracking AONM and the IAEA's verification and inspection processes. A number of submissions have put the view that the IAEA's safeguards system is close to collapsing.

5.51 In this regard, ANAWA stated:

I actually think that the nuclear non-proliferation treaty has completely failed and that underpinning agreements for the peaceful use of nuclear technology or the export of uranium to China based on the hope that the NPT is going to somehow keep things under control is optimistic in the extreme. I think it is quite clear that all the weapons states are in contravention of the NPT. They have all failed to meet their obligations to disarm, and I think it is quite telling that China has been criticised for breaking its article I commitment, which is the ban on sharing nuclear technology for military

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56 ANSTO, *Submission 20*, p. 1.

uses. That is not just my opinion; that is actually an opinion that was put forward by the US Department of State in its August 2005 report.<sup>57</sup>

- 5.52 Several organisations have supported the view that the IAEA's safeguards system is weakening because of comments made by the IAEA Director-General, Dr Mohamed ElBaradei on 25 March 2006 in relation to the IAEA's verification budget. Dr ElBaradei stated that the IAEA's verification budget operates on 100 million Euros per annum, which is comparable to the budget of a local police department:

With these resources, we oversee approximately 900 nuclear facilities in 71 countries. When you consider our growing responsibilities – as well as the need to stay ahead of the game – we are clearly operating on a shoestring budget.<sup>58</sup>

- 5.53 The Director General of ASNO appeared to argue that the IAEA's verification budget is adequate:

I have seen recent statements about this. For instance, Dr ElBaradei said last week that the safeguards budget is only about the same as the Vienna Police Department. I am not sure whether that is quite true. The safeguards budget is currently about \$US120 million a year; plus some voluntary funding, which amounts to another \$US20 million or so; plus a range of projects that countries, including Australia, carry out to benefit the IAEA. There are activities under some 16 'support programs'.<sup>59</sup>

- 5.54 ASNO clarified that the IAEA budget was being spent in more effective ways than it used to be:

At one time the IAEA system was very heavily built around uniformity – safeguards would be the same in each and every country. This ended up with something like 60 per cent of safeguards efforts being spent in Germany, Japan and Canada when we know that the problems lie elsewhere. So, when we say the budget does not look as if it is good enough, I think it is quite important that we ensure that the budget is being spent in productive ways that are focusing on problem areas, and that has been the direction for developing the safeguards

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57 Mr James Courtney, *Transcript of Evidence*, 6 October 2006, p. 2.

58 Dr Mohamed ElBaradei, *Putting Teeth in the Nuclear Non-Proliferation and Disarmament Regime*, 25 March 2006, viewed 7 November 2006, <[www.iaea.org](http://www.iaea.org)>.

59 Mr John Carlson, *Transcript of Evidence*, 25 October 2006, p. 30.

system. A good deal more attention is being given to what we call 'information-driven safeguards' that are directing verification effort towards problem areas. So the budget stays under review. The board of governors is satisfied for the moment that it stays under review.<sup>60</sup>

- 5.55 ASNO explained that the IAEA Board of Governors was reviewing the IAEA inspection and verification budget for the purpose of strengthening safeguards, particularly through improvements in efficiency:

The question is: is that enough money to do the job? This has been looked at very carefully by the IAEA Board of Governors and by experts, and there are two directions in which our efforts have gone. One direction is to increase the budget – from memory, it was increased by 16 per cent three years ago – and that is subject to further review. The other direction is to make safeguards more efficient, and there has been a major program as part of a program to strengthen safeguards. ... there may be an impression that it is only recently that attention has been given to strengthening safeguards through the creation of the IAEA Special Committee on Safeguards and Verification, for instance. In fact, there has been a very active program of strengthening safeguards since the first Gulf War in the early 1990s, with particular emphasis on developing ways of detecting undeclared nuclear activities. Part of that program has also been about how to prioritise safeguards work so as to make the system more efficient.<sup>61</sup>

- 5.56 The Committee was interested to know whether Australia was involved in measures to increase the safeguards budget.
- 5.57 ASNO informed the Committee that Australia is not currently putting forward a particular proposal in this regard, but rather assessing whether it can make efficiency savings in its operations:

At this stage, we are not promoting a particular proposal. The agency is going through a process of introducing what are called integrated safeguards. These are developing the optimum combination of what are called traditional safeguards measures – regular inspections, accountancy,

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60 Mr John Carlson, *Transcript of Evidence*, 25 October 2006, p. 30.

61 Mr John Carlson, *Transcript of Evidence*, 25 October 2006, p. 30.

cameras, seals and that sort of thing – with the activities possible under the additional protocol, which give wider access and a broader range of information. The agency is looking at how to get the optimum combination for each state. As part of that, we expect savings to be made which can then be diverted to problem areas. We are really reviewing how that process is working out before we can come to some judgement about whether there is a need for additional resources at the moment.<sup>62</sup>

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62 Mr John Carlson, *Transcript of Evidence*, 25 October 2006, pp. 30-31.





## Committee comment and recommendations

### **Inquiry timeframe**

- 6.1 The Australian and Chinese Governments signed the Nuclear Material Transfer and the Nuclear Cooperation Agreements on 3 April 2006. Upon their tabling in Parliament on 8 August 2006, these Agreements were automatically referred to the Committee for inquiry. Both Agreements allow for twenty joint parliamentary sitting days for inquiry with expiration for inquiry occurring on 16 October 2006.
- 6.2 On 6 September 2006, the Chair of the Committee wrote to the Minister for Foreign Affairs to inform him that the Committee was continuing its review of the treaties and intending to hold further public hearings. Under the twenty sitting day inquiry timeframe, the Committee would have had to complete its inquiry and report to Parliament in a timeframe of 11 weeks. In addition, to the China Uranium Inquiry, the Committee was also inquiring into 19 other treaty actions.
- 6.3 The Committee believes that the initial timeframe of 11 weeks would not have allowed sufficient time to advertise the inquiry to seek submissions, conduct public hearings, and adequately fulfil its obligations under its resolution of appointment.
- 6.4 The short inquiry timeframe for treaties of such national importance also has the potential to cause public distrust of the committee inquiry process and expose it to unnecessary public criticism, spurring

allegations of non-transparency and unaccountability and denying Australians their right to have a say in the area of Australia's international obligations.

- 6.5 If the treaties had been referred to the Committee for inquiry earlier, the Committee would have had more time to conduct its inquiry. For example if the Agreements had been tabled in Parliament on the last sitting day in June, (which equates to tabling of the Agreements one joint parliamentary sitting day earlier) the Committee would have had an additional six weeks to conduct its inquiry and easily been able to report within twenty sittings days. The treaties were signed at the beginning of April and the Committee does not understand why it took a further 18 weeks before tabling the treaties in Parliament.
- 6.6 Most of the information in the NIAs would have been available to the agencies responsible for negotiating the Agreements when the decision was made to proceed to negotiations. In this context, a further 18-week delay before making this information available to the Parliament and the Committee is hard to justify.

## Impact of the Agreements

- 6.7 The Committee understands the Agreements resulted from a joint request from Australia's uranium producers and the Chinese Government and that Australia is in a position to benefit economically from the sale of uranium to China in the medium to longer term.
- 6.8 The Committee believes that with China's expected future energy demand, its willingness to buy Australian uranium coupled with Australia's uranium producers' willingness to supply uranium to China, the Agreements will provide the impetus for the expansion of Australia's uranium industry. Whether the sale of uranium to China will translate into a large economic benefit for Australia is unascertainable from the evidence received during the Committee's inquiry. The economic benefit will depend on the future commercial decision of uranium producers and the future policy decisions of State, Territory and Federal governments as well as the state of the world market in uranium over time.
- 6.9 The Committee must also acknowledge the evidence it has received in opposition to the Agreements on the possible environmental cost (i.e. nuclear waste from nuclear power generation) and detrimental social

effects directly or indirectly attributable to the sale of uranium to China. In addition, the Committee acknowledges the evidence it received in relation to claims made against China of its breaches of important international treaties and its lack of transparency and accountability inherent in its system of government and its company governance structures.

- 6.10 The Committee believes that developing stronger links between Australia and China (as will be achieved through these treaties) is the most effective way of influencing internal Chinese governance issues.
- 6.11 As the Committee received only one submission in relation to the relative benefits of thorium reactors, which fall outside the scope of the inquiry, it has made no findings on the relative merits of this technology, but recommends that further research and development of thorium technologies be undertaken.
- 6.12 The Committee also believes that the Australian Government should promote a range of renewable energy technologies to help meet China's growing energy requirements.

## **Safeguarding the use of Australian uranium**

- 6.13 The Committee received substantial evidence from concerned organisations and individuals that the safeguards included in the Agreements are ineffective based on the view that the International Atomic Energy Agency (IAEA) safeguards system is already inadequate.
- 6.14 The Committee received assurances from the Australian Safeguards and Non-Proliferation Office (the agency with carriage of the treaties), that Australian uranium is safeguarded through various mechanisms, from military use. These mechanisms form part of the IAEA's safeguards system, which now includes an Additional Protocol and consists of a material accounting system and a verification and inspection process. In addition to IAEA safeguards requirements, Australia and China have for the most part negotiated Administrative Arrangements that detail how both Parties will fulfil their obligations under the Agreements. The Committee received evidence that Australia has more safeguards in place with its bilateral safeguards partner countries than have other uranium producing countries that currently supply uranium to China. The Committee also welcomes and supports continued dialogue between Australia and China on non-proliferation issues.

- 6.15 The Committee heard claims that the budget for the IAEA's verification regime may be inadequate or not effectively allocated. The Committee supports any IAEA budget increases and efficiency improvements, which could strengthen the existing IAEA safeguards system.
- 6.16 In view of the evidence received, the Committee has concluded that the treaties reviewed in this report are in Australia's interest and should be ratified.

## **Recommendations**

- 6.17 In respect to the Committee's comments and evidence collected during the course of its inquiry, the Committee makes the following recommendations.

### **Recommendation 1**

**The Committee recommends that the Australian Government provide funding for intensive research and development in the area of energy generation using thorium reactors with the purpose of comparing its waste and energy generation capacity to conventional nuclear reactors.**

### **Recommendation 2**

**The Committee recommends that the Australian Government through its membership of the International Atomic Energy Agency (IAEA) calls for an urgent review of the IAEA's funding requirements and that Australia sets a lead by increasing its voluntary contributions and lobbies other governments to do likewise.**

### **Recommendation 3**

**The Committee recommends that the Australian Government lobbies the IAEA and the five declared nuclear weapons states under the NPT to make the safeguarding of all conversion facilities mandatory.**

**Recommendation 4**

The Committee recommends that the Australian Government increases funding allocated to the Australian Safeguards and Non-Proliferation Office's safeguards support and international outreach programs to ensure that effective safeguards are being applied in regard to the treaties.

**Recommendation 5**

The Committee recommends that the Australian Government continue its dialogue with the Chinese Government about governance and transparency issues with a view to the Australian Government offering practical support where appropriate.

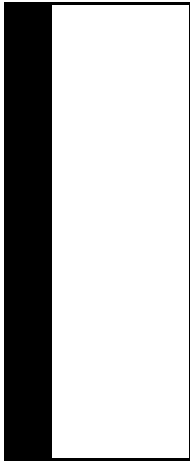
**Recommendation 6**

The Committee supports the *Agreement between the Government of Australia and the Government of the People's Republic of China on the Transfer of Nuclear Material* and recommends that binding treaty action be taken.

**Recommendation 7**

The Committee supports the *Agreement between the Government of Australia and the Government of the People's Republic of China for Cooperation in the Peaceful Uses of Nuclear Energy* and recommends that binding treaty action be taken.

**Dr Andrew Southcott MP**  
**Committee Chair**



## Dissenting Report by Senator Andrew Bartlett, Joint Standing Committee on Treaties, China Australia Uranium Agreement

*Senator WORTLEY – Would it be possible for Australian uranium to end up being used in other ways under this sort of a treaty? Are we relying on trust here?*

*Mr Carlson – Obviously, there is a degree of trust in any international treaty.....(27)*

*If we want to "put teeth", real teeth, into the nuclear arms control regime, then not only must we examine the structure of the regime, but equally important, we must examine the social and security environment in which this regime operates.*

International Atomic and Energy Agency(IAEA)

Director Dr. Mohamed ElBaradei<sup>1</sup>

- 1.1 The Democrats believe the majority report failed to provide a compelling argument that the sale of uranium to China is in the national or global interest. The ease with which Australian uranium could find its way into Chinese nuclear weapons was not addressed by the Committee report. I agree with the Australian Conservation Foundation observation that:

<sup>1</sup> Putting Teeth in the Nuclear Non-Proliferation and Disarmament Regime, speech by IAEA Director General Dr. Mohamed ElBaradei, 25/03/06, <http://www.iaea.org/NewsCenter/Statements/2006/ebsp2006n004.html>



The central claim of this treaty that Australian uranium can only be used for peaceful purposes in China is invalidated by serious shortcomings in both the IAEA safeguards and Australian bilateral agreement safeguards regimes.<sup>2</sup>

- 1.2 The committee report outlined China's lack of accountability and track record but had no answer to the concerns outlined. China has not demonstrated that it can be trusted on sticking to agreements and continues its nuclear proliferation. China is not alone in this regard, but this proposed Treaty action only relates to China.
- 1.3 The economic, social and environmental arguments given in favour of exporting uranium to China were unconvincing. The risks (security, social and environmental) of selling uranium to China far outweigh the economic benefits. It makes more sense to engage with China on renewable energy to avoid those risks.
- 1.4 Using Australia's National Interest as the sole criterion by which to assess whether to sell uranium to China is a fundamentally flawed approach. Selling uranium to China has global implications. I believe this agreement is not in the net national interest of Australia in any case, but the risk to humanity worldwide and Australia's responsibility as a good global citizen should be the ultimate test. This was not addressed by the Committee's report. Given the increasing tensions around the world and appropriate concerns about weapons of mass destruction, increases the risk of the proliferation on nuclear weapons is clearly not in the global interest.
- 1.5 Contributing to China's development, through the development of clean safe energy is far more responsible.

## **Recommendation 1:**

1. *The proposed China uranium exports treaty is not in Australia's national interest or in the global interest and recommend that the Australian Parliament should not ratify the proposed treaty.*

<sup>2</sup> ACF and MAPW, submission No. 26, p.1.

## Nuclear Proliferation

### Global

- 1.6 The strong link between the use of uranium for civil and nuclear purposes and the dangers of a nuclear arms race led to the international community putting in place the Nuclear Non-Proliferation Treaty (NPT) aimed at halting the spread of nuclear weapons and providing a framework for disarmament by the nuclear weapons states.
- 1.7 The NPT has 189 members - an almost universal membership - with the notable exceptions of India, Israel and Pakistan. The NPT provides important security benefits - by giving assurance that, in the great majority of non-nuclear-weapon States, enriched uranium is not being used for weapon purposes.
- 1.8 The NPT is the only legally binding agreement in which the five nuclear-weapons states have committed to disarmament.
- 1.9 However in the 60 years since the UN called for the elimination of all nuclear weapons, they have been taken up by Israel, India, Pakistan and North Korea, disarmament has stalled and there are almost as many nuclear weapons around the world now as there were when the NPT was first signed.
- 1.10 IAEA Director General Dr. Mohamed ElBaradei has said that much has changed since the introduction of the NPT which has undermined the regime and the ability to prevent nuclear proliferation:

But much has changed since the NPT came into being. In the area of security, in addition to the renewed drive to acquire nuclear weapons on the part of States and extremist groups, globalization has brought with it two unwelcome developments: (1) the spread of nuclear technology and know-how; and (2) the emergence of clandestine nuclear procurement networks. These trends make the current challenges to the regime quite acute.<sup>3</sup>
- 1.11 The IAEA has recorded over 650 confirmed incidents of trafficking in nuclear or other radioactive material since 1993. In 2004, there were

<sup>3</sup> Putting Teeth in the Nuclear Non-Proliferation and Disarmament Regime, speech by IAEA Director General Dr. Mohamed ElBaradei, 25/03/06, <http://www.iaea.org/NewsCenter/Statements/2006/ebsp2006n004.html>

almost 100 such incidents. Much of the nuclear smuggling is from civil nuclear programs.

- 1.12 The Report *Nuclear Power No Solution to Climate Change* notes that of the 60 countries that have built research reactors or nuclear power plants, over 20 are known to have used their 'peaceful' facilities for covert weapons research and/or production. In some cases nation states have succeeded in producing nuclear weapons under cover of a peaceful nuclear program – India, Pakistan, Israel, South Africa and North Korea.<sup>4</sup>
- 1.13 In November this year, former UN weapons inspector Dr Blix took Britain and the other permanent members of the UN Security Council - USA, China, Russia and France - to task for failing to comply with their obligations under the NPT by failing to do more to eliminate their nuclear arsenals.
- 1.14 Dr Blix expressed his frustration at the way nuclear nations are in the process of developing new types of weapons rather than examining how they could manage defence needs with non-nuclear weaponry.
- 1.15 The Australian Democrats support calls from Dr Blix for the UN General Assembly to call a world summit on disarmament to revive the NPT efforts to reduce the risk of a nuclear war.

### **China's Track Record**

- 1.16 China's nuclear arsenal is not considered as modern as the other states, but it is reported to be modernising.
- 1.17 The Committee report notes that China currently sources the majority of its uranium domestically. China has made it quite clear that Australian uranium will free up China's domestic supplies for military purposes.
- 1.18 Of the five declared nuclear weapon states, only China has not yet officially declared that it is no longer producing fissile material for weapons purposes for weapons.<sup>5</sup>
- 1.19 The ACF/MAPW report *An Illusion of Protection* argues that China's large stockpile of fissile material is a proliferation concern:

<sup>4</sup> Dr Jim Green (2006) *Nuclear Power No Solution to Climate Change*, p.4.

<sup>5</sup> *An Illusion of Protection*, ACF and MAPW, p.37.

China's large stockpile of weapons-usable fissile material is of proliferation concern – it is estimated to have produced between 3-7 tons of weapons-grade plutonium (requiring an average of 3-4 kg per Pu weapon); and 15-15 tons of HEU, on which Chinese weapons are believed to rely heavily (using 20-30 kg per HEU weapon).<sup>6</sup>

1.20 The report *An Illusion of Protection* also raises concerns about Chian's nuclear protection, control and accounting:

Little is known about the state of China's nuclear material protection, control and accounting system, but it is considered vulnerable to insider theft, "questions remain about the level of protection at China's nuclear facilities", and the China National Nuclear Corporation "produces, stores, and controls all fissile material for civilian as well as military applications".<sup>7</sup>

1.21 There is substantive evidence to show that China has provided nuclear weapons technology, materials and designs to Pakistan; stolen US nuclear weapons designs; proliferated WMD missile technology, weapons systems and components to countries including Iran, Pakistan, Libya, Syria, and North Korea; and has provided assistance to Iran's nuclear program.<sup>8</sup>

1.22 ASNO in its submission to the committee argued that China has improved upon its past proliferation record since it joined the NPT in 1992 and became obligated under the treaty to not assist any non-nuclear weapons state to manufacture or acquire nuclear weapons:

There have been no adverse findings by the IAEA or NPT Parties at NPT review Conferences of non-compliance by China with its NPT obligations, or by Nuclear Supplier Group (NSG) members that China has not complied with NSG guidelines.<sup>9</sup>

<sup>6</sup> *An Illusion of Protection*, ACF and MAPW, p.37.

<sup>7</sup> *An Illusion of Protection*, ACF and MAPW, p.37

<sup>8</sup> Dr Jim Green (2006) *Nuclear Power No Solution to Climate Change*, p.4.

<sup>9</sup> ASNO, Submission No.30, p.5.

1.23 However, the ACF and MAPW submission cited evidence from a 1999 US House of Representatives investigation into commercial and military concerns with China:

In 1999 a US House of Representatives investigation, the "Select Committee On U.S. National Security and Military/Commercial Concerns With The People's Republic of China", also called the Cox Report, found that:

- (i) China had stolen design information on the US's most advanced thermonuclear weapons
- (ii) China was responsible for repeated thefts of the most sophisticated US nuclear weapons technology and that this practice likely continued
- (iii) China had proliferated such military technology to a number of other countries, including regimes hostile to the US, and
- (iv) China's actions posed a direct threat to the US and its friends and allies.

The "Overview" to the Cox Report (p.xxxvi-xxxvii ) stated that:

"The Peoples Republic of China is one of the leading proliferators of complete ballistic missile systems and missile components in the world.

The PRC has proliferated military technology to Iran, Pakistan, and North Korea. In 1991, the PRC agreed to adhere to the April 1987 Missile Technology Control Regime (MTCR) guidelines, but the PRC has not accepted the revisions to those guidelines issued in 1993. The 1993 MTCR guidelines increase the kinds of missile systems subject to controls and call for a "strong presumption to deny" both sales of complete missile systems and components that could be used in ballistic missiles.

The PRC has provided Iran with ballistic missile technology, including guidance components and the recent transfer of telemetry equipment. The PRC reportedly is providing Iran with solid-propellant missile technology. Additionally, the PRC provided Iran with the 95-mile range CSS-8 ballistic missile. Since the mid-1980s, the PRC has transferred C-802 anti-ship cruise missiles to Iran. The PRC has also provided assistance to Iran's nuclear programs.

Pakistan. The PRC has provided Pakistan with a wide range of assistance. The PRC reportedly supplied Pakistan with CSS-X-7/M-11 mobile missile launchers and reportedly has provided Pakistan with the facilities necessary to produce M-11 missiles. The PRC provides Pakistan with assistance on uranium enrichment, ring magnets, and other technologies that could be used in Pakistan's nuclear weapons program."<sup>10</sup>

1.24 Mr James Courtney from ANAWA also cited a criticism by the US Department of State in its August 2005 report that China had broken its article 1 commitment, which is a ban on sharing nuclear technology.<sup>11</sup>

1.25 The report *An Illusion of Protection* cited further evidence of ongoing proliferation concern:

The 2005 *Deadly Arsenals* report from the Carnegie Endowment for International Peace documents how China's behaviour, both in the past and in an ongoing way, has been of significant proliferation concern. Despite commitments in 1992, 1994 and 1998 to uphold the non-proliferation regulations of the Missile Technology Control Regime, Chinese state-owned corporations continued to engage in illicit nuclear arms transfers to Pakistan, Iran, North Korea and Libya. *Deadly Arsenals* states "the continuing nature of China's role as an international supplier of nuclear technology for weapons programs is in question." The authors point out that a 2004 US intelligence survey concluded "the proliferation behaviour of Chinese companies remains of great concern."<sup>12</sup>

1.26 ACF, MAPW and FOE argued that the unacceptable proliferation record should invalidate China for consideration as a potential customer for exports of Australian uranium.

1.27 The Committee report states that "in addition to IAEA safeguards, Australia was relying on trust that AONM would not be diverted to non-peaceful uses by China"

<sup>10</sup> ACF and MAPW, *Submission No. 26*, p.3.

<sup>11</sup> Mr James Courtney, Transcript of Evidence, 6 October 2006, p.2.

<sup>12</sup> *An Illusion of Protection*, ACF and MAPW, p.37

- 1.28 The Democrats agree with ACF and MAPW in their assertion that given China's track record on proliferation and concerns about China's own protection control and accounting system, Australia can not be confident in this or future Chinese Governments' compliance with key international non-proliferation norms on weapons of mass destruction and associated military technology. Trust alone just won't cut it.

## Safeguards

### IAEA and the NPT

- 1.29 The IAEA is a United Nations organisation created in 1957, tasked with promoting safe, secure and peaceful global cooperation in nuclear technology. The IAEA is charged with verifying through its inspection system that member states comply with their obligation under the NPT and other non-proliferation agreements.
- 1.30 The IAEA safeguards system still suffers from flaws and limitations, despite improvements over the past decade.
- 1.31 The Report *Nuclear Power No Solution to Climate Change* notes that at least eight NPT member states have carried out weapons-related projects in violation of their NPT agreements, or have carried out permissible (weapons-related) activities but failed to meet their reporting requirements to the IAEA – Egypt, Iraq, Libya, North Korea, Romania, South Korea, Taiwan, and Yugoslavia.<sup>13</sup>
- 1.32 As noted earlier, the Director of the IAEA has acknowledged that much has changed since the introduction of the NPT, which has undermined the regime.
- 1.33 The IAEA is charged with verifying that for a given period no significant quantity of nuclear material has been diverted or that no other items subject to safeguards have been misused by the State, and that this is to be done in a timely manner.
- 1.34 In their report *An Illusion of Protection*, ACF and MAPW argue that the definitions of significant quantity and timeliness are now out of date. Advances in technology mean that smaller quantities of plutonium

<sup>13</sup> Dr Jim Green (2006) *Nuclear Power No Solution to Climate Change*, p.4.

can be used to make a devastating weapon, and countries have the means and technology to move and convert in shorter periods of time:

For plutonium, a significant quantity is defined as eight kilograms; for highly enriched uranium (enriched to 20 per cent or more in the isotope uranium-235) it is defined as 25 kilograms; for low-enriched uranium (enriched to less than 20 per cent in uranium-235) it is 75 kilograms; and for uranium-233 it is 8 kilograms. The significant quantities are, on today's standards, far too high. There is no difficulty in fabricating a nuclear weapon with an explosive power equivalent to that of 20,000 tonnes of TNT using about 4 kilograms or less of suitable plutonium. A country with access to medium level technology could do so. A good designer could get an explosive power equivalent to that of about 1,000 tonnes of TNT with just one kilogram of such plutonium. To be credible, the 'significant amounts' used by the IAEA should be redefined and considerably reduced.

In the concept of IAEA safeguards, the timeliness of detection of the diversion of nuclear material from peaceful to military purposes is crucial. The Agency's objective is defined as "the timely detection of diversion of significant quantities of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosive devices or for purposes unknown, and deterrence of such diversion by the risk of early detection".

The guidelines established for effective safeguards are that the diversion of a significant quantity should be detected, with a 90-95 per cent probability, within a 'conversion time' with a false-alarm rate of no more than 5 per cent. The concept of a conversion time is based on the time likely to be required to convert diverted fissile material into a form that could be used in a nuclear weapon.

The times are: for each of plutonium and highly-enriched uranium, 7-10 days; for plutonium in spent nuclear-reactor fuel, 1-3 months; for low-enriched and natural uranium 12 months; and for plutonium oxide 1-3 weeks. Again, on today's standards these times are too long. In fact, the cases



of Iraq, North Korea, and South Africa have put paid to the expectation of timely detection.

The fact is that the IAEA cannot ensure timely detection. If a country decided to divert plutonium or highly enriched uranium from its civil nuclear programme to fabricate nuclear weapons, it could assemble nuclear weapons very quickly. The country could first produce all the non-nuclear component of nuclear weapons. The diverted fissile material could be fabricated into the nuclear components for the weapons and these components assembled into the weapons in a short time. The Agency's timeliness goal is simply not attainable, even with the best will in the world.<sup>14</sup>

- 1.35 ACF and MAPW warn that the most serious problem facing the IAEA regime is reprocessing plants, where it is almost impossible to detect the diversion of quantities of weapon-usable plutonium from a reprocessing plant:

But undoubtedly the most serious problem facing a nuclear safeguard system is that the most sensitive plants so far as the diversion of weapon-usable materials - particularly plutonium reprocessing plants (in which plutonium is chemically separated from unused uranium and fission products in spent nuclear-power reactor fuel elements) - are impossible to safeguard effectively. Using existing and foreseeable safeguards technology, it is not possible for a safeguards agency to detect the diversion of quantities of weapon-usable plutonium from a reprocessing plant that could be used to fabricate one or more, or even many, nuclear weapons.<sup>15</sup>

- 1.36 IAEA Director General, Dr. Mohamed ElBaradei, acknowledged that the verification system is inadequate and that, even with the newly expanded verification rights under the "additional protocols", until all countries sign on to the additional protocol this cannot come into force:

The discovery of a clandestine nuclear programme in Iraq after the 1991 Gulf War made it painfully clear that the IAEA verification system was inadequate. At that time, IAEA

<sup>14</sup> *An Illusion of Protection*, ACF and MAPW, p.ii-iii.

<sup>15</sup> *An Illusion of Protection*, ACF and MAPW, p.iii

verification activities were performed under legal agreements that focused IAEA verification primarily on the nuclear activities that a country had "declared" to the Agency. The limited rights of access to information and nuclear sites were not adequate for the IAEA to investigate whether there were "undeclared" activities.

The lessons learned in Iraq in the early 1990s prompted the international community to significantly expand the IAEA's verification rights. These new rights were incorporated into a 1997 "additional protocol" to the basic verification agreement between each State and the Agency. This additional protocol gave IAEA inspectors expanded access to a country's nuclear activities. Most importantly, it gave the Agency better verification tools to uncover possible "undeclared" activities.

But the introduction of the "model additional protocol" did not automatically solve the problem. The protocol only applies to those countries that actually subscribe to it. Today, out of the 189 countries that are party to the NPT, 118 still do not have additional protocols in force.<sup>16</sup>

- 1.37 It is significant to note that although China has signed on to voluntary application of the 'additional protocol', it has restricted it to a few facilities.
- 1.38 China has also failed to ratify the Comprehensive Test Ban treaty (CTBT). The CTBT aims to ban all nuclear weapons testing. China is one of the countries (along with the USA) that must ratify the Treaty in order for it to come into effect.
- 1.39 Dr Elbaradei, has argued that a lot more needs to be done to address nuclear proliferation. In a speech earlier this year he outlined 5 key measures that should be done to strengthen the existing order for preventing the spread of nuclear weapons and move towards nuclear disarmament:
  - Tighten Controls for Access to Nuclear Fuel Cycle Technology
  - Accelerate Global Efforts to Protect Nuclear Material
  - Support Effective Nuclear Verification

<sup>16</sup> Putting Teeth in the Nuclear Non-Proliferation and Disarmament Regime, speech by IAEA Director General Dr. Mohamed ElBaradei, 25/03/06,

<http://www.iaea.org/NewsCenter/Statements/2006/ebsp2006n004.html>

- Reinvigorate Disarmament Efforts
- Increase the Effectiveness of the United Nations Security Council

1.40 Dr Elbaradei emphasised that international support would be needed for the implementation of such measures.

1.41 Australia is undermining the current NPT agreement by allowing the USA to sell Australian Uranium to Taiwan, which is not a signatory to the NPT:

The NPT is being undermined by Australian agreement to export uranium to a non-NPT signatory state, Taiwan, and by Australian support for the US-India nuclear agreement to put aside NPT and other restrictions on nuclear trade with India and to accept India's nuclear weapons status.

This discriminatory US practice will be seen to sanction and reward countries developing and testing nuclear weapons against international norms.<sup>17</sup>

1.42 There seems to be little motivation by key countries to do anything and, as noted earlier, inaction has drawn criticism from ex-weapons inspector Hans Blix.

1.43 One of the key problems for the IAEA however is the severe lack of funding.

1.44 The Friends of the Earth in their submission note that:

The IAEA's verification program operated under conditions of a zero real growth budget for more than 15 years, then there was an increase in the regular budget by 12.4% for 2004, with a further 3.3% increase foreseen for 2005. The total regular budget spent on safeguards for the year of 2005 amounts to \$119,854,787.<sup>18</sup>

1.45 In a speech this year Dr ElBaradei stated that the IAEA is severely under funded:

IAEA verification today operates on an annual budget of about €100 million - a budget comparable to that of a local police department. With these resources, we oversee approximately 900 nuclear facilities in 71 countries. When

<sup>17</sup> ACF and MAPW, *Submission No. 26*, p.7.

<sup>18</sup> Friends of the Earth, *Submission No. 24*, pp.10-11.

you consider our growing responsibilities - as well as the need to stay ahead of the game - we are clearly operating on a shoestring budget.<sup>19</sup>

1.46 The Democrats support the majority committee report's recommendation to increase funding to the IAEA, but note that funding alone will not fix the flaws in the system outlined above.

1.47 The system is far weaker for declared Nuclear Weapons States (NWS) than for Non-Nuclear Weapons States.

Therefore, a decision by the Chinese regime to remove a facility from voluntary safeguards would in no way be a breach of IAEA safeguards commitments. It would only amount to a breach of the Australia-China bilateral agreement. There would be no UN/IAEA involvement in resolving a situation whereby a facility using AONM was withdrawn from IAEA safeguards.<sup>20</sup>

## Australia and China Agreement

1.48 As a Declared Nuclear State, China is not obliged to conclude safeguard agreements with the IAEA, although they have agreed along with the other states that IAEA safeguards *may be* applied to all *or part of* their civil nuclear programs.

1.49 ACF and MPAW noted in their submission that:

China has only a voluntary and limited safeguards agreement with the IAEA and can in future withdraw from any tier of safeguards, or withdraw any facility or nuclear materials from the coverage of IAEA safeguards. Australian's are being asked to trust in the decisions of this and of every future Chinese government to continue to comply with today's voluntary IAEA agreement and the Australian bilateral agreement.<sup>21</sup>

<sup>19</sup> Putting Teeth in the Nuclear Non-Proliferation and Disarmament Regime, speech by IAEA Director General Dr. Mohamed ElBaradei, 25/03/06, <http://www.iaea.org/NewsCenter/Statements/2006/ebsp2006n004.html>

<sup>20</sup> Friends of the Earth, *Submission No. 24*, p.12.

<sup>21</sup> ACF and MAPW, *Submission No. 26*, p.6.

- 1.50 The Committee report notes that while China would have the right to choose which facilities are eligible for IAEA inspections under its agreement with the IAEA, any facilities using Australia Originated Nuclear Material (AONM) must be jointly agreed by ASNO and the CAEA, and must be subject to the China-IAEA nuclear material safeguards agreement.
- 1.51 ASNO told the Committee that there are ten facilities on the IAEA's list of agreed facilities for inspection.
- 1.52 Evidence suggests that while there might be ten facilities agreed for inspection, the reality is that last year only 3 of those facilities were examined by the IAEA in 2005.<sup>22</sup>
- 1.53 It's also important to point out that Australia does not have the capacity or systems in place to directly inspect and monitor China's facilities. Australia relies purely on the under resourced IAEA to undertake the inspections.
- 1.54 ACF and MAPW pointed out that when Australia's safeguards are reliant on an inadequate and under resourced system they are not foolproof:
- Australia's uranium exports are the equal of, or better than, safeguards applied by other uranium exporting nations. This claim ignores the problem that all uranium-exporting nations are reliant on the inadequate and under-resourced safeguards system of the IAEA, and it cannot be credibly advanced to justify Australian uranium exports.<sup>23</sup>
- 1.55 ASNO told the Committee that Australia would withdraw sale of Australian uranium if China reneged on the safeguard agreements.
- 1.56 However, the ACF noted that while Australia could cancel its sales, they have no inspection capacity and have no ability in practice to recover nuclear materials. Australia will then be powerless to stop its uranium from ending up in nuclear weapons.

.....in our view, no capacity in any real sense to intervene post an event of diversion or indirect facilitation of the weapons program in China through our uranium exports.<sup>24</sup>

<sup>22</sup> FOE, Submission no. 24, p.15.

<sup>23</sup> *An Illusion of Protection*, ACF and MAPW, p. 5.

<sup>24</sup> Mr David Noonan, *Transcript Evidence*, 5 October 2006, p.8.

1.57 China will not be reliant solely on Australia for uranium. They currently have agreements with Canada and Kazakhstan. There are other countries that also export uranium, so there is no real threat to China from Australia withholding supply.

1.58 This raises the question; if this treaty were to go ahead and Australia significantly expanded its uranium mining operations, would Australia really then take the commercial risk and cancel its sale to China? This point was also made by ACF to the Committee:

We believe it is also nonsensical of ASNO to have claimed to you that Australia could require return of nuclear materials from China should there be evidence to doubt the honorary peaceful use of Australian uranium in China. We believe that commercial considerations will prevail and that the Australian safeguards are inadequate, and may be watered down over time. We believe this is partly demonstrated by the secretive nature of the administrative arrangements that apply in detail that put into practice the proposed Australian bilateral treaty. We find that unacceptable.<sup>25</sup>

1.59 A critical loophole in the agreement is that Australian uranium will not be subject to safeguards when it first arrives in China and enters the uranium conversion. At this stage Australian uranium could be diverted for use in nuclear weapons:

Australian uranium will disappear off the safeguards radar soon after its arrival in China as it enters a uranium conversion facility that is outside of IAEA safeguards and inspections, and run by the Chinese National Nuclear Corporation for joint military and nuclear power purposes. Thereafter only a nominated 'equivalent' amount of nuclear material will be subject to an Australian safeguards accounting process.

Some of our exported uranium could then be used for military purposes, potentially directly for weapons production or as fuel for military and research reactors. China has also been implicated in export of uranium hexafluoride gas to Iran to facilitate their uranium enrichment program

<sup>25</sup> Mr David Noonan, *Transcript Evidence*, 5 October 2006, p.8.

which is recognised as having potential to produce fissile materials for nuclear weapons production.<sup>26</sup>

- 1.60 ASNO argued that an "equivalent" amount of uranium is tracked and that the outcome is the same as if AONM has been tracked through the conversion part.
- 1.61 While this might be the case at a purely semantic level, the Australian Government cannot claim that Australian uranium will only be used for peaceful purposes. On a practical level, while an equivalent amount will only be used for peaceful purpose, Australian uranium frees up domestic and other imported materials for use in nuclear weapons. Either way, Australia is facilitating China to increase their nuclear material potential for domestic or international use.
- 1.62 Another area of concern is the reprocessing of uranium for further use. Reprocessing facilities in China are dual use facilities (domestic and military) with capability for production of fissile materials for nuclear weapons.

A large majority of the uranium separated at reprocessing plants around the world is not used; it is just stockpiled. According to the IAEA, uranium from reprocessing plants accounts for just one per cent of all uranium usage. Only two countries use uranium from reprocessing and the other 29 nuclear power countries do not. Likewise, large amounts of plutonium separated at reprocessing plants are not reused but are stockpiled such that the global stockpile of civil plutonium is a staggering 270 tonnes, which is enough to build roughly 27,000 nuclear weapons. As I mentioned before, at least one director of the World Nuclear Association, Steve Kidd, describes reprocessing as being 'environmentally dirty' and less than satisfactory. The reference for that is *Nuclear Engineering International*, 11 May 2004. He was specifically referring to the common PUREX reprocessing technology employed in France and the UK, so the question would be: if reprocessing is environmentally dirty in France and the UK according to the World Nuclear Association, what on earth is it going to be like in China? It is unnecessary

<sup>26</sup> ACF and MAPW, *Submission No. 26*, p.6.

because most of the plutonium and uranium is simply not reused.<sup>27</sup>

- 1.63 ACF, MAPW, and FOE argued that reprocessing should be removed from the treaty text:

Australian should not allow reprocessing of spent nuclear fuel in any bilateral uranium exports agreement. This treaty proposes a programmatic approval to a 30 year reprocessing program for separation and stockpiling of weapons usable plutonium derived from the use of Australian uranium in China's nuclear power program.<sup>28</sup>

- 1.64 The Democrats are also concerned with the failure of the Government to provide public access to the "Administrative arrangements" that underpin the deal. As ACF and MAPW argued in their submission, how can Parliament or the public know if the proposed practices of safeguards can match the claims?

ACF consider that it is contrary to the proper exercise of public and Parliamentary scrutiny of the proposed treaty, and an unacceptable practice of secrecy by ASNO, to fail to make public the key "Administrative Arrangements" to enact the Australian bilateral safeguards agreement in China. Without this public access no one can independently know if the proposed practice of safeguards can match the claims. Or if the ASNO accounting practices of 'equivalence' and of 'proportionality' are to be credibly or otherwise applied to Australian Obligated Nuclear Materials in China.<sup>29</sup>

- 1.65 International and Australian safeguards are inadequate to guarantee that Australian uranium to China will not end up in nuclear weapon material. The Democrats are concerned that the current international and national regime is not effective in preventing nuclear weapon proliferation, and that as a major uranium exporter Australia should use its influence to strengthen safeguards and stop nuclear weapons proliferation.

<sup>27</sup> Dr Jim Green, *Transcript Evidence*, 25 October 2006, p.10.

<sup>28</sup> ACF and MAPW, *Submission No. 26*, p.1.

<sup>29</sup> ACF and MAPW, *Submission No. 26*, p.7.



## Recommendations:

2. *IAEA safeguards should be strengthened through universal, mandatory and permanent application, including the full application of Additional Protocols, to Nuclear Weapon States including China in the same degree as to Non-Nuclear Weapon States.*
3. *Australia should withdraw uranium sales from all Nuclear Weapon States that continue to fail to comply with their nuclear disarmament obligations under the Non-Proliferation Treaty or that fail to ratify and abide by the Comprehensive Test Ban Treaty including verifiable closure of nuclear weapons testing facilities.*
4. *Australia should withdraw from agreements to export uranium to Taiwan and fully enforce and maintain restrictions against nuclear trade, including uranium exports to any non Non-Proliferation Treaty signatory states such as India and Pakistan.*
5. *Proposed "Administrative Arrangements" to enact the Australian bilateral safeguards agreement in China must be made public and be subject to Parliamentary scrutiny as part to the process of formal consideration of the proposed Nuclear Cooperation Treaty with China.*
6. *Australia should not enter into additional bilateral agreements allowing for conversion and enrichment of Australian uranium in countries including China and India where such arrangements are not in place.*
7. *The Australian Government should withdraw its agreement to reprocessing in existing bilateral treaties, and not provide any future agreements or consent including to China, for reprocessing of Australian Obligated Nuclear Materials or for any use of such materials in MOX or other Plutonium based fuels*
8. *Australia should require support for a Fissile Materials Cut-Off Treaty that prohibits reprocessing and the separation of weapons capable fissile materials, from all countries with which Australia currently has bilateral nuclear cooperation treaties.*

## China: Trust and Accountability

1.66 Given that nuclear safeguards are based, to a large degree, on the ability of China to set up effective and independent regulators of Australian uranium, China's track record on accountability should be considered.

1.67 The Friends of the Earth argued that China is considered one of the most undemocratic nations on earth. Friends of the Earth further argued that:

If China was a stable, democratic country with no WMD programs, and no foreseeable likelihood of pursuing WMD, uranium sales might be contemplated regardless of the flaws in the safeguards system.<sup>30</sup>

1.68 Mr Aran Martin, from La Trobe University, in the *Paper Nuclear Safeguards and Chinese Accountability*, outlined China's abuses of World Trade Organisation (WTO) agreements. The paper identifies a lack of enforcement of intellectual property rights (IPR), lack of transparency, poor adoption of international product standards, and hidden import barriers and industry subsidies. The paper argues that non-compliance with WTO agreements has implications for Australia's agreement with China on uranium:

China's WTO compliance record has the following implications for nuclear safeguards signed with China.

Firstly, given that lack of transparency and its associated problems are so prevalent within China, a nuclear safeguard system based upon the existence of independent, effective regulatory bodies will be flawed. Regulatory bodies will not, in all probability, be independent from political pressures, and their ability to regulate will be hampered by the culture of opacity throughout Chinese industries.

Secondly, mindful that China has a dreadful record of WMD proliferation activities, the opacity criticised by the WTO, combined with the clear examples of China breaching its trade obligations in pursuit of other policy objectives, creates a scenario whereby China has the ability to breach Australian

<sup>30</sup> Friends of the Earth, *Submission No. 24*, p.7.

safeguards in pursuit of other objectives and escape accountability by arguing a lack of capacity.

Lastly, it is clear from Chinese behaviour that the government has only implemented its obligations in many areas of trade through a system of pressure exerted by extremely powerful external organisations. On difficult issues, China seems to do little to meet its obligations that it is not directly pressured into.

Business and industry groups also raise concerns over China's accountability.

Groups as diverse as the Department of Foreign Affairs and Trade (DFAT), Australian Industry Group (AIG), Insurance Australia Group (IAG), AVCARE, United States Trade Representative (USTR), United States Committee for International Business (USCIB), and the EU commission have criticised elements of China's accountability.<sup>31</sup>

1.69 ACF and MAPW in their submission noted that:

China has a record of willingness to break its signed word in order to pursue other policy objectives. China's capacity to implement its agreements is hampered by serious governance issues, including opacity and corruption. China has a practice of enabling breaches through a strategy identified by the United States Trade Representative as "*delay, partial implementation, and creation of new barriers*" which prevents the international community from effectively holding China to account.<sup>32</sup>

1.70 ACF and MAPW also noted that China has a track record of failure to sign and comply with international norms and international treaties and conventions on a range of issues.<sup>33</sup>

1.71 A number of submissions to the inquiry raised concerns about human rights abuses and freedom of expression in China. Many of these submissions argued that Australia should not sell uranium to China unless Australia addresses these human right and other abuses.

<sup>31</sup> ACF and MAPW, *Submission No.26*, pp.21-22.

<sup>32</sup> ACF and MAPW, *Submission No.26*, p.2.

<sup>33</sup> ACF and MAPW, *Submission No.26*, p.2.

- 1.72 The Committee report notes the evidence from DFAT explaining that the Australian Government's approach to pursuing human rights issues with China is through direct discussion and practical cooperation.
- 1.73 The Democrats believe that Australia has a responsibility to protect human rights both at home and abroad; that we need to make it clear that our commitment to human rights is non-negotiable and that we should not ignore human rights abuses for the sake of trade, economic or security deals with other countries. Clearly Australia should be doing more than we currently are to address human rights abuses in China.
- 1.74 Friends of the Earth argued that the lack of civil society safeguards such as lack of labour and human rights and whistleblower protections, and press freedom, actually impact on the potential to safeguard Australian uranium.
- 1.75 Friends of the Earth questioned the Prime Minister's willingness to rely on faith that Australia's uranium will not end up in nuclear weapons, when China has not earned this trust:
- Prime Minister John Howard has conceded that ultimately Australians must put our faith in the Chinese regime not to use Australian uranium in nuclear weapons. He did not explain what the repressive, militaristic, secretive Chinese regime has done to earn that trust.<sup>34</sup>
- 1.76 China's Government is considered by many countries, organisations and individuals as undemocratic, secretive and has a poor international track record on compliance and accountability. The majority Committee report acknowledges this and provides no convincing evidence that contradicted accountability and transparency concerns raised during this inquiry, and yet still recommended the approval of the treaty. The Democrats believe given China's lack of accountability and transparency, no dependable guarantees can be given that Australia's uranium will not end up in nuclear weapons.

<sup>34</sup> Friends of the Earth, *Submission No. 24*. p.7.

## Environmental Case

- 1.77 The Committee report argues that one of the benefits of selling uranium to China was the assistance it would give to China in reducing greenhouse gas emissions.
- 1.78 The Minerals Council told the committee that nuclear power would be a great benefit to China:
- A key reason for the current interest in developing nuclear power is the role it can play in climate change management. The maths here is quite simple. Every 22 tonnes of uranium used saves the emission of about one million tons of CO<sub>2</sub> relative to coal fired generators producing the same amount of energy. On a life cycle basis, nuclear power plants emit less CO<sub>2</sub> than other energy production mechanisms.<sup>35</sup>
- 1.79 In making this claim the Minerals Council has not taken into account the greenhouse gas emissions released as a result of mining, transport, enrichment, reprocessing and waste disposal. While nuclear power may produce less greenhouse gas than coal, other energy sources such as renewable energy are far superior.
- 1.80 Renewable energy sources such as wind, hydro, geothermal, wind and wave produce less than a third of the CO<sub>2</sub> emissions of nuclear.
- 1.81 The nuclear industry leaves a huge environmental waste legacy. Thousands of tonnes a year of radioactive waste is the result across the nuclear fuel cycle, whether mine tailings, chemical waste from enrichment, or spent nuclear fuel and the waste from reprocessing plants.
- 1.82 Uranium mining in Australia has a poor environmental track record. Uranium mining creates waste in the form of mine tailings. Tailings can contain up to 80% of the radioactivity of the original ore.
- 1.83 In Australia, tailings are stockpiled and the run-off stored on the mine site in large dams. Ranger mine has so far produced over 30 million tonnes of radioactive tailing waste. Olympic Dam has produced over 60 million tonnes, growing at 10 million tonnes annually. There have been many recorded leaks from tailings dams at Australia's existing mines. In 2002 a Democrats initiated and chaired Senate inquiry examined the regulation, monitoring and reporting of environmental

<sup>35</sup> Mr Peter Morris, Minerals Council, *Transcript of Evidence*, 16 October 2006, p.2.

impacts at Ranger and Beverly mines in response to numerous leaks and spills. The majority report of that inquiry concluded that changes were necessary in order to protect the environment and its inhabitants from serious or irreversible damage. Despite the report, questions about the long-term management of toxic tailing waste remain.

- 1.84 Uranium enrichment also produces a massive amount of chemical waste. Every tonne of natural uranium mined and enriched for use in a nuclear reactor produces about 130 kg of enriched fuel, leaving 870 kg of waste. The bulk (96%) of this waste is depleted uranium (DU), for which there are few applications; the United States Department of Energy alone has 470,000 tonnes in store. There is about 1.2 million tonnes of DU now stored around the world.
- 1.85 A typical power plant produces 25-30 tonnes of spent fuel annually. About 12,000 to 14,000 tonnes of spent fuel are produced by power reactors worldwide. This waste is radioactive for hundreds and thousands of years.
- 1.86 ACF noted that the agreement between China and Australia does not include any information or agreement on how China manages its nuclear waste.

It is also known that China is planning to use, or may already use, deep well injection to dispose of liquid radioactive waste. Yet, according to the School of Engineering at Vanderbilt University:

*“There are large uncertainties in our knowledge of the behaviour of liquid wastes in geological strata, and as a result there is a potential for migration of substances from the place of its disposal to the accessible environment.”*

China’s injection of nuclear waste into geological strata adds to the dilemma posed by the nuclear industry’s overall waste management problems. Disposal of nuclear waste in this way creates difficulties into the future both for production of food safe for human consumption and for water supply/resources.<sup>36</sup>

- 1.87 There is concern that China would consider using untested and highly risky technology to dispose of a deadly form of waste.

<sup>36</sup> WILPF, *Submission 29*, p.4.

- 1.88 ASNO in its submission to the Committee noted that China had recently joined the *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, and therefore will be subject to international scrutiny.
- 1.89 The Democrats argue that until China develops an internationally acceptable waste management plan that Australia should not sell uranium to China.
- 1.90 The nuclear cycle also uses a lot of water. Australia is one of the driest continents on earth, and scientists predict that because of climate change our rainfall will decrease by 15%. Uranium mining uses a large quantity of water. Olympic Dam uranium mine in one of the driest parts of Australia extracts over 30 million litres of water from the Great Artesian Basin which has an adverse impact on the fragile mound springs. Expanding uranium mining will place an extra burden on our already fragile water resources.
- 1.91 The negative environmental impact of the nuclear cycle, whether it is here in Australia, China or else where in the world, cannot be uncoupled from Australia's decision to contribute to its creation by expanding mining and export.

## Economic case

- 1.92 The Committee report argues in its conclusions that the sale of uranium to China will provide economic benefits to Australia. As the Committee report notes, ASNO told the committee that it is estimated an additional \$250 million per annum could be derived from sale of uranium to China.
- 1.93 The Committee report also noted the evidence provided by Friends of the Earth, ACF, MAPW and ANAWA that the export value of uranium to China is equivalent to only 0.33 per cent of the value of current Australian exports to China in 2005.
- 1.94 Mr Noonan from ACF told the committee that compared to a recent renewable energy sale to China, the value of uranium exports is small:
- If you are looking at Australia's national interests – and there has been a focus, without disrespect, on economic and trade matters in this uranium sales proposal – ASNO made clear to you that the value of Australian uranium exports to China might be some \$250 million a year by 2020. A company from

Tasmania – the Roaring Forties – has recently sold three wind farms to China valued at \$300 million. That is one renewable sale worth more than the maximum in accrued uranium sales to China that may be realised within 15 years. If the Australian community, the commercial world and government, with respect, gave fulsome support to the renewables industry, we could be gaining far greater access to the Chinese market – the 15 per cent mandatory renewable energy renewables market – and far greater innovation, job creation and export value for Australia than ever can be realised at the maximum extent of the nuclear power expansion there through uranium sales.<sup>37</sup>

- 1.95 Labor MP, Mr Wilkie, appeared to argue that Mr Noonan's argument was a false choice when both uranium and renewable export can be had. The Democrats agree with Mr Noonan's response that renewable energy is clean and sustainable and does not contribute to unresolved nuclear hazards and weapons proliferation:

One is sustainable and we can have confidence in it and the other brings serious and unresolved nuclear hazards.<sup>38</sup>

- 1.96 I agree with the views expressed by environment and nuclear groups, highlighted in the majority Committee report, that "for such a small return, Australia was risking the misuse of its uranium (namely weapons manufacture) and contributing to the environmental and social problems associated with nuclear waste management".
- 1.97 I agree that in the case of uranium the risks (security, social and environmental) clearly outweigh any economic benefit.

## Conclusion

- 1.98 The evidence presented to the committee as outlined in this report has led me to a different conclusion to other Committee members.

<sup>37</sup> Mr David Noonan, Transcript Evidence, 5 October 2006, p.8.

<sup>38</sup> Mr David Noonan, Transcript Evidence, 5 October 2006, p.8.



1.99 I remain concerned that the international safeguards remain flawed and there appears to be little political will to address the issues. I agree with the sentiments reflected by ACF and MAPW that:

There is much that could be done to improve the international safeguards system, however its fundamental flaws and the pervasive interconnections between the civil and military applications of nuclear technologies and materials mean that the most prudent and responsible position is to phase out the mining and export of uranium.<sup>39</sup>

1.100 The Democrats believe that nuclear industry is not necessary, it poses unacceptable proliferation, security and health risks, and there is no solution to the intractable waste problem.

1.101 If Australia is concerned about how China will meet its increasing energy needs, the Government should be doing more to promote gas and renewable energy. Renewable energy is cleaner, safer, sustainable, does not lead to nuclear weapons proliferation and does not leave behind an environmental legacy.

1.102 I am concerned that, while the Committee report suggests that the Government should promote renewable energy, it does not include this in its recommendations, whilst including a recommendation to investigate Thorium reactors.

## **Recommendations:**

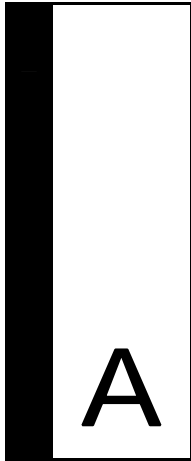
9 *In recognition that the global nuclear industry is contrary to the principals of sustainability, the Democrats call for a phase out of the nuclear industry including Australian uranium mining and exports; and*

10 *That significantly increased resources and Government support be directed to research and development into alternative, safe, clean, renewable energy resources of energy.*

<sup>39</sup> An Illusion of Protection, ACF and MAPW, p. 5.

**Senator Andrew Bartlett**

**Australian Democrats**



## Appendix A - Submissions

### Treaties tabled on 8 August 2006

- 1 Australian Patriot Movement
- 2 Ms Melanie Szydzik
- 3 Mr Hans Paas J.P
- 4 Mr Richard Broinowski
- 5 Mr Don Reid
- 6 Ms Janet Rice
- 7 Mr John Lewis
- 8 Dr Bob Rich
- 9 Ms Lena Lapinska
- 10 Mr Marc Allas
- 11 Mrs June Lossius
- 12 Ms Sarah Guy
- 13 Dr Christopher Walker
- 14 Name Withheld
- 15 Ms Carol Williams
- 16 Ms Michele Madigan
- 17 Friends of the Earth Adelaide

- 
- 18 Ms Rosalind Byass
  - 19 People for Nuclear Disarmament, Perth
  - 20 Australian Nuclear Science and Technology Organisation
  - 21 Ms Simone Siracusa
  - 22 Ms Mary Cusack
  - 23 Ms Pat Finegan
  - 24 Friends of the Earth, Australia
  - 25 M Campbell
  - 26 Australian Conservation Foundation and Medical Association for the  
Prevention of War Australia
  - 27 Anti-Nuclear Alliance of Western Australia
  - 28 Future Directions International Pty Ltd
  - 29 Women's International League for Peace and Freedom
  - 30 Department of Foreign Affairs and Trade
  - 31 Association of Mining and Exploration Companies
  - 32 Minerals Council of Australia
  - 33 Paladin Resources Limited
  - 34 Australian Uranium Association

**FORM LETTER 1****NAME**

Achimovich, Dr Lois  
Averis, Di  
Bagot, Christina  
Beer, Jane  
Benjamin, Rowland  
Best, Judy  
Brooks, Tara  
Brown, Candy  
Brownrigg, Jane  
Champness, Rodney  
Chodkiewicz, Marek  
Coffey, Brian  
Cook, Kylie & O'Halloran, Peter  
Coote, Gillian  
Creenaune, Holly  
Davies, Sharon  
Day, Christopher  
Denborough, Liz  
Digance, Luke  
Eaton, Nirada C  
Faull, Gabrielle  
Fischer, Lucia  
Foster, John  
Frame, Amber  
Frame, Nicola  
Frank, Martin

**NAME**

Fryer, Louise  
Green, Sophie  
Grounds, Dr Jenny  
Haig, Jodie  
Hopkins, Kate  
Hungerford, Alice  
Hunter , Gillian  
Kagan, Lana  
Keaney, Benjo  
King, Emma  
Kyne, Cate  
Lambert, Graeme  
Lilly, Deborah  
Louey-Gung, Shani  
Mackle, Pat  
Macmillan, Greg  
Magini, Carlo  
Marrickville Peace Group  
Massam, John C  
Matteson, Jeska  
Mayberry, Joy  
McEvoy, Lucy  
McLeavy, Lyn  
Mead, Rachael  
Medlin, Clare  
Mellors, Felicia

**NAME**

Morris, Louise

Morton, Dan

Nicholls, Ron

O'Connor, Mary

O'Halloran, Mizuho

Olijnyk, Sarah

Owen, John

Parrish, Ange

Pastalatzis, Nick

Pearson, Rianna

Peter Hobbs

Raymond, Katherine

Roberts, Dr. Alan

Schoeman, Jess

Seed, John

Smith, Colin

Spagnolo, Anne-Marie

Stevens, Alys

Stylian, George

Sullivan ,Jessi

Taylor, William

Verschuer, Elizabeth Anne

Walsh, Margaret

Watson, Nadia

Welsh, Elana

Wills, Stephen

Wilson, Anne

**NAME**

Winter, Kathleen

Wolfenden, Adam

## FORM LETTER 2

### NAME

Goddard, Anne

Smith, Eleanor

Nagle, Angela



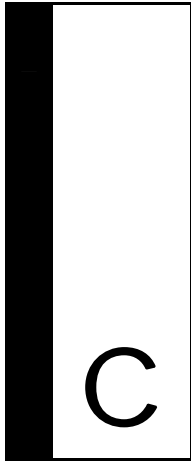




## Appendix B - Exhibits

- 1 M Campbell  
*Uranium* (Related to Submission No. 25)
- 2 Women's International League for Peace and Freedom  
*Martin Ferguson and Uranium Mining* (Related to Submission No. 29)
- 3 Women's International League for Peace and Freedom  
*Summary of Presentation* (Related to Submission No. 29)
- 4 Women's International League for Peace and Freedom  
*Transcript: Nuclear Terrorism is a threat: El Baradei*  
(Related to Submission No. 29)
- 5 Women's International League for Peace and Freedom  
*Excerpt from "Yellow Cake Country: Australia's Uranium Industry"*  
(Related to Submission No. 29)
- 6 Women's International League for Peace and Freedom  
*The Age, 4 October 2006 'Opinion: More threat than panacea'* (Related to Submission No. 29)
- 7 Anti-Nuclear Alliance of Western Australia  
*US Department of State's Adherence and Compliance with arms control, non proliferation disarmament agreements and commitments* (Related to Submission No. 27)
- 8 Anti-Nuclear Alliance of Western Australia  
*CRS Report for Congress: China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues* (Related to Submission No. 27)

- 9 People for Nuclear Disarmament, Perth  
*The Green's 3rd Edition, Let the Facts Speak: An Indictment of the Nuclear Industry* (Related to Submission No. 19)
- 10 Future Directions International Pty Ltd  
*Australia's Energy Options, 6 October 2005* (Related to Submission No. 28)
- 11 Department of Foreign Affairs and Trade  
*A Guide to Administrative Arrangements* (Related to Submission No. 30)



## Appendix C - Witnesses

**Monday, 4 September 2006 - Canberra**

**Attorney-General's Department**

Mr Greg Manning, Assistant Secretary, International Security and Human Rights Branch

**Australian Nuclear Science and Technology Organisation**

Mr Steve McIntosh, Senior Adviser, Government Liaison

**Department of Foreign Affairs and Trade**

Mr Peter Baxter, First Assistant Secretary, North Asia Division

Mr John Carlson, Director-General, Australian Safeguards and Non-Proliferation Office

Ms Sarah de Zoeten, Executive Officer, International Law and Transnational Crime

Mr Craig Everton, Safeguards Officer, Nuclear Accountancy and Control Section

Mr Andrew Leask, Assistant Secretary, Australian Safeguards and Non-Proliferation Office

Mr David Mason, Executive Director, Treaties Secretariat, Legal Branch

Mr John Sullivan, Assistant Secretary, Arms Control and Counter-Proliferation Branch

## Thursday, 5 October 2006 - Adelaide

Australian Conservation Foundation and Medical Association for the Prevention of War  
Australia

Mr David Noonan, Nuclear Free Campaigner

Government of South Australia

Mr Daniel O'Rourke, Senior Minerals Economist, Department of  
Primary Industries and Resources (PIRSA)

Dr Edward Tyne, Director Mineral Resources, Department of Primary  
Industries and Resources (PIRSA)

Women's International League for Peace and Freedom

Ms Ruth Russell, Joint National Coordinator

## Friday, 6 October 2006 - Perth

Anti-Nuclear Alliance of Western Australia

Mr James Courtney

Association of Mining and Exploration Companies

Dr Justin Walawski FCPA, Chief Executive

Future Directions International Pty Ltd

Mr Craig Lawrence, Executive Director and CEO

People for Nuclear Disarmament, Perth

Mrs Judith Blyth, Committee Member

## Monday, 16 October 2006 - Canberra

Minerals Council of Australia

Mr Peter Morris, Senior Director, Economics Policy

Ms Melanie Stutsel, Director, Environment and Social

Mr Rob Rawson, Director, Safety and Health

## Wednesday, 25 October 2006 - Melbourne

### Australian Uranium Association incorporating the Uranium Information Centre

Mr Michael Angwin, Executive Director

Mr Ian Hore-Lacy, Director, Uranium Information Centre

### Department of Foreign Affairs and Trade

Mr John Carlson, Director-General, Australian Safeguards and Non-Proliferation Office

Mr Craig Everton, Safeguards Officer, Nuclear Accountancy and Control Section

Mr John Sullivan, Assistant Secretary, Arms Control and Counter-Proliferation Branch

Mr Peter Roggero, Director, China Political and External Section

### Friends of the Earth (Australia)

Dr Jim Green, National Nuclear Campaigner

### Medical Association for Prevention of War (Australia)

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