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Report 151

Treaty tabled on 28 October 2014

Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy

September 2015
Canberra

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Contents

Foreword vii
Membership of the Committee ix
Resolution of Appointment xi
List of abbreviations xii
List of recommendations xiii

REPORT

1 Conduct of the Inquiry 1
Nuclear power 2
The inquiry process 4
Conduct of the Committee's review 5

2 The benefits for Australia and India 7
The benefits 7
Electricity generating capacity in India 9
Increasing nuclear generation 10
Opposition to uranium exports 12
Conclusion 13

3 The Agreement 15
Background 15
The Agreement 16
Differences with other Nuclear Cooperation Agreements 20

4 Nuclear non-proliferation 23
The Nuclear Suppliers' Group 24
The Nuclear Non-Proliferation Treaty 26
Comprehensive test ban treaty 29
Missed opportunities 29
The way forward 31

5 Nuclear safety in India 35
Separation of Civil and Military nuclear facilities 36
Nuclear regulation 39

6 Specific provisions 43
Accounting for Australian nuclear material 44
Mixing of safeguarded and unsafeguarded materials 47
Reprocessing 48
Enrichment 50
The additional protocol 52
Enforcement and Conflict resolution 53
Conflict with the Treaty of Rarotonga 55
Conclusion 56

7 Concluding remarks 59

ADDITIONAL COMMENTS

The Hon Melissa Parke MP and Senator Sue Lines 63
Summary Overview 63
Specific areas of concern 65
The NCA contains other problem areas. 74
Conclusion 75

Australian Greens. 77
The benefits for Australia and India 78
The Agreement 78
Nuclear non-proliferation 79
Nuclear safety in India 81

APPENDICES

Appendix A–Submissions 83

Appendix B–Witnesses 85

Foreword

According to the Minerals Council of Australia, our country possesses 30 per cent of the known global reserves of uranium ore.

Australia can become the world leader in supplying fuel for low-carbon emission base load electrical power in rapidly expanding economies looking to secure their energy needs while limiting greenhouse gas emissions.

One of the largest of the rapidly developing economies is India.

The *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy*, can double the size of Australia's nuclear mining sector. In terms of export income, it could add up to $1.75b to the Australian economy. It could increase the number employed in uranium mining from 4,000 at present to 8,000.

Contributors to the inquiry identified excellent opportunities for employment and export income in South Australia and Western Australia. There are also potential benefits to Queensland should uranium mining recommence in that state.

The Indian Government is planning an exponential growth in electricity generation from a base of 408kWh per capita per year in 2001 to 5,300kWh per capita per year in 2052.

India is using a spectrum of low-carbon emission technologies to generate this additional power, with nuclear power playing an important part. India will need access to a reliable and consistent supply or uranium if it is to achieve this growth.

While there are considerable benefits for both parties, negotiating a nuclear cooperation agreement with India presents some significant risks. The question for the Committee is, then, can the risks be tolerated and ameliorated?

There are three areas of risk associated with the Agreement.

The first is the risk to nuclear non-proliferation. As India is not a signatory to the Nuclear Non-Proliferation Treaty, it exists in isolation from the nuclear non-proliferation mainstream. However, it is not realistic to expect India to renounce the manufacture of nuclear weapons and dismantle its nuclear arsenal India borders two other nuclear weapons states with which it is occasionally in conflict.

The agreement represents a different approach to non-proliferation in India; using engagement to bring India into the nuclear non-proliferation mainstream.

The Committee agrees with this approach, but believes that only genuine non-proliferation advances on India's part will ameliorate the potential risk to the non-proliferation framework. Consequently, the Committee has made recommendations encouraging the Australian Government to engage in a diplomatic effort to produce genuine non-proliferation advances from India.

The second area of risk relates to the regulation of India's nuclear facilities. Both the Auditor-General of India and the International Atomic Energy Commission have identified a number of weaknesses in the regulatory framework that jeopardise nuclear safety and security.

The Committee has made a recommendation that the sale of uranium to India only commence when these weaknesses have been addressed.

The final area of risk concerns the provisions of the Agreement. A number of the provisions were debated in considerable detail. The Committee was satisfied that the bulk of concerns have been addressed.

In particular, in relation to accounting for Australian nuclear materials in India, the Committee reached a position where it trusts that Australian nuclear material in India can be accounted for and tracked.

The Committee identified two unresolved issues relating to the provisions of the Agreement; the terminology used in the consent mechanism for the refinement of nuclear materials, and the question of whether the proposed Agreement breaches the Treaty of Rarotonga. In both cases, the Committee was faced with opposing interpretations presented by reputable sources. The Committee has recommended that the outline of the Australian Government's legal advice on these matters be included in the Government Response to the Report.

The Committee took the time to fully consider the issues raised by this Agreement, and has reached a view that, provided the recommended steps are taken as part of the implementation of the Agreement, it can be ratified and the benefits realised.

Mr Wyatt Roy MP
Chair

Membership of the Committee

Chair	Mr Wyatt Roy MP	
Deputy Chair	The Hon Kelvin Thomson MP	
Members	Mr Andrew Broad MP	Senator Chris Back
	Dr Dennis Jensen MP	Senator David Fawcett
	Mr Ken O'Dowd MP	Senator Sue Lines
	The Hon Melissa Parke MP	Senator the Hon Joe Ludwig
	The Hon Dr Sharman Stone MP	Senator James McGrath
	Mr Tim Watts MP	Senator Glenn Sterle
	Mr Brett Whiteley MP	Senator Peter Whish-Wilson

Committee Secretariat

Secretary	Stuart Woodley *(to 15.05.15)* Lynley Ducker *(from 30.07.15)*
Inquiry Secretary	Dr Narelle McGlusky
Senior Researchers	Kevin Bodel
Researcher	Belynda Zolotto
Administrative Officers	Cathy Rouland

Resolution of Appointment

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

a) matters arising from treaties and related National Interest Analyses and proposed treaty actions and related Explanatory Statements 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

   (iii) 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

ACF	Australian Conservation Foundation
ANU	Australian National University
ASNO	Australian Safeguards and Non-Proliferation Office
CTBT	Comprehensive Nuclear Test Ban Treaty
EU	European Union
FoE	Friends of the Earth
GW	Gigawatts
IAEA	International Atomic Energy Agency
ICAN	International Campaign to Abolish Nuclear Weapons
INFCIRC	IAEA Information Circular
kWh	Kilowatt hours
MCA	Minerals Council of Australia
NIA	National Interest Analysis
NCA	Nuclear Cooperation Agreement
NPT	Nuclear Non-Proliferation Treaty
OECD	Organisation for Economic Cooperation and Development
UAE	United Arab Emirates
VVER	Vodo-Vodyanoi Energetichesky Reaktor (water–water power reactor)

List of recommendations

4 Nuclear non-proliferation

Recommendation 1

The Committee urges the Australian Government to commit significant diplomatic resources to encouraging India to become a party to the Comprehensive Test Ban Treaty, and to negotiate a fissile material cut-off treaty.

Recommendation 2

The Committee recommends the Australian Government considers facilitating the negotiation of a nuclear arms limitation treaty for the Indian subcontinent region. Such a treaty could feasibly have an initial goal of preventing the development of thermonuclear weapons by India and Pakistan, and prevent the deployment of such weapons to the region by China.

5 Nuclear safety in India

Recommendation 3

Committee recommends that, should the *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* be ratified, uranium sales to India only commence when the following conditions are met:

- India has achieved the full separation of civil and military nuclear facilities as verified by the IAEA;
- India has established an independent nuclear regulatory authority under law;
- the Indian nuclear regulator's existing policies and arrangements have been reviewed to ensure its independence;

- the frequency, quality and comprehensiveness of onsite inspections at nuclear facilities have been verified by the IAEA as being best practice standard; and
- the lack of sufficient planning for the decommissioning of nuclear facilities has been rectified.

6 Specific provisions

Recommendation 4

The Committee recommends that the Australian Government outline the legal advice it has received regarding the consent to reprocessing provisions in Article VI of the proposed *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy*.

7 Concluding remarks

Recommendation 5

The Committee recommends that the Australian Government outline the legal advice it has received concerning whether the proposed *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* breaches Australia's obligations under the *South Pacific Nuclear Weapons Free Zone Treaty*.

Recommendation 6

Subject to the above recommendations, the Committee supports the *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* and recommends that binding treaty action be taken.

1

Conduct of the Inquiry

1.1 The proposed *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* (the proposed Agreement) was tabled in the Australian Parliament on 28 October 2014.

1.2 It has taken the Committee considerably longer than the allotted 20 sitting days to complete the inquiry. There are compelling reasons for this.

1.3 The most obvious of these is the basic intent of the proposed Agreement – the sale of Australian nuclear material to India, a state that is not a party to the Nuclear Non-Proliferation Treaty and that is armed with nuclear weapons.

1.4 Another reason for the time taken to complete this inquiry has been the participation of some of the most experienced and incisive minds in the non-proliferation and strategic issues communities, both in Australia and abroad.

1.5 Attracting such a wealth of knowledge has resulted in the consideration of a number of very complex issues, many of which needed careful examination.

1.6 The Committee would like to take this opportunity to thank all participants to the inquiry for their conscientious, patient and valuable assistance with the inquiry.

1.7 The issues that have emerged from the evidence are examined in the six following Chapters:

- Chapter two examines the potential benefits for Australia and India should the proposed Agreement be ratified;
- Chapter three provides an overview of the proposed Agreement and its provisions;
- Chapter four examines the strategic and non-proliferation issues arising out of the proposed Agreement;

- Chapter five deals with nuclear safety in India;
- Chapter six works through issues related to the specific provisions of the proposed Agreement; and
- Chapter seven makes some concluding remarks.

Nuclear power

1.8 The Report discusses some complex matters relating to nuclear power. To assist with these discussions, it is worth providing a brief overview of the mechanics of nuclear power electricity generation.

1.9 Nuclear reactors used to generate electricity use a process called nuclear fission.

1.10 Nuclear fission involves the destruction of radioactive uranium and plutonium atoms, which generates heat and the formation of other radioactive elements, such as caesium, strontium and iodine. The heat from the process, which constitutes about a third of the energy generated by fission, is used to heat water to steam, which is then used to drive an electricity generator turbine.[1]

1.11 Uranium in its natural form is uranium oxide, often called 'yellowcake'. In this form it is mined in order to produce nuclear fuel. The uranium in uranium oxide is generally of two types: the more common, stable, uranium 238 and the less common, radioactive, uranium 235. Uranium 238 usually comprises 99.3 per cent of naturally occurring uranium.[2]

1.12 The numbers 238 and 235 refer to the atomic weight of the element. In simple terms, this refers to the number of subatomic particles (protons and neutrons) that make up the nucleus of the element. The higher the atomic weight of the element, the larger and heavier it is.[3]

1.13 There are a number of steps involved in turning uranium oxide into nuclear fuel. The first is to refine the fuel to increase the concentration of uranium 235 to between three and five percent of the uranium. At this

1 US Department of Energy, *Nuclear Fuel Cycle*, < http://www.energy.gov/ne/nuclear-fuel-cycle >, viewed on 14 April 2015.

2 US Department of Energy, *Nuclear Fuel Cycle*, < http://www.energy.gov/ne/nuclear-fuel-cycle >, viewed on 14 April 2015.

3 US Department of Energy, *Nuclear Fuel Cycle*, < http://www.energy.gov/ne/nuclear-fuel-cycle >, viewed on 14 April 2015.

concentration, there is sufficient uranium 235 to commence a fission reaction.[4]

1.14 Refining the nuclear fuel involves first removing the oxide from the uranium, then concentrating (called 'enriching') the uranium 235.[5]

1.15 Enrichment is undertaken by making use of the difference in weight between uranium 235 and uranium 238. The most common technique involves spinning the uranium in a centrifuge. The heavier uranium 238 will migrate to the outer edge of the centrifuge while the lighter uranium 235 will remain in the centre, separating the radioactive and the stable uranium. The excess uranium 238 is called depleted uranium and has a number of uses unrelated to nuclear power generation based on its weight.[6]

1.16 The enriched uranium is then manufactured into fuel pellets, which are combined into rods. Fuel rods are then combined into fuel assemblies. Most nuclear reactors use between 150 – 200 assemblies.[7]

1.17 The Committee has already heard evidence from the Australian Safeguards and Non-Proliferation Office that, should India purchase uranium ore from Australia, the uranium will be exported to the United States to be processed into fuel assemblies before being exported to India for use.[8]

1.18 Nuclear fuel that has undergone fission is called 'spent fuel'. The spent fuel assemblies are first stored in water to contain any residual heat and radioactivity.[9]

1.19 Following storage, spent fuel assemblies can be reprocessed to extract plutonium created during fission, and any uranium that has not been consumed. The extracted uranium and plutonium, both which can be

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4 US Department of Energy, *Nuclear Fuel Cycle*, < http://www.energy.gov/ne/nuclear-fuel-cycle >, viewed on 14 April 2015.

5 US Department of Energy, *Nuclear Fuel Cycle*, < http://www.energy.gov/ne/nuclear-fuel-cycle >, viewed on 14 April 2015.

6 US Department of Energy, *Nuclear Fuel Cycle*, < http://www.energy.gov/ne/nuclear-fuel-cycle >, viewed on 14 April 2015. The most common use for depleted uranium is shielding on radiographic medical equipment.

7 US Department of Energy, *Nuclear Fuel Cycle*, < http://www.energy.gov/ne/nuclear-fuel-cycle >, viewed on 14 April 2015.

8 Dr Robert Floyd, Director General, Australian Safeguards and Non-Proliferation Office (ASNO), Department of Foreign Affairs and Trade, *Committee Hansard*, Canberra, 12 February 2015, p. 3.

9 US Department of Energy, *Nuclear Fuel Cycle*, < http://www.energy.gov/ne/nuclear-fuel-cycle >, viewed on 14 April 2015.

used as nuclear fuel, are fed back into the fuel production process to be included in new fuel assemblies.[10]

1.20 The waste products from reprocessing are highly radioactive, and require special treatment. In general these waste products are sealed into glass and then into steel canisters. At present the steel canisters are stored behind shielding pending final disposal, which, according the Australian Nuclear Science and Technology Organisation, will need to involve burial in stable geological formations deep underground.[11]

The inquiry process

1.21 The Committee's resolution of appointment empowers it to inquire into any treaty to which Australia has become signatory, on the treaty being tabled in Parliament.

1.22 The treaties, and matters arising from them, are evaluated to ensure that ratification is in the national interest, and that unintended or negative effects on Australians will not arise.

1.23 Prior to tabling, major treaty actions are subject to a National Interest Analysis (NIA), prepared by Government. This document considers arguments for and against the treaty, outlines the treaty obligations and any regulatory or financial implications, and reports the results of consultations undertaken with State and Territory Governments, Federal and State and Territory agencies, and with industry or non-government organisations.

1.24 The Committee takes account of these documents in its examination of the treaty text, in addition to other evidence taken during the inquiry program.

1.25 Copies of this treaty and its associated documentation may be obtained from the Committee Secretariat or accessed through the Committee's website at:

- http://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Treaties/28_October_2014

10 Australian Nuclear Science and Technology Organisation (ANSTO), *The Nuclear Fuel Cycle*, <http://www.ansto.gov.au/NuclearFacts/ManagingRadioActiveWaste/Thenuclearfuelcycle/index.htm >, viewed on 14 April 2015.

11 ANSTO, *The Nuclear Fuel Cycle*, <http://www.ansto.gov.au/NuclearFacts/ManagingRadioActiveWaste/Thenuclearfuelcycle/index.htm >, viewed on 14 April 2015.

Conduct of the Committee's review

1.26 The treaty action reviewed in this report was advertised on the Committee's website from the date of tabling. Submissions for the treaty were requested by 28 November 2014.

1.27 Invitations were made to all State Premiers, Territory Chief Ministers and to the Presiding Officers of each Parliament to lodge submissions. The Committee also invited submissions from individuals and organisations with an interest in the particular treaty under review.

1.28 The Committee held four public hearing as part of this inquiry:

- 9 February 2015 in Canberra;
- 12 February 2015 in Canberra;
- 18 May 2015 in Melbourne; and
- 15 June 2015 in Canberra.

1.29 The transcripts of evidence from the public hearing may be obtained from the Committee Secretariat or accessed through the Committee's website under the treaty's tabling date, 28 October 2014.

1.30 A list of submissions received and their authors is at Appendix A.

1.31 A list of witnesses who appeared at the public hearing is at Appendix B.

2

The benefits for Australia and India

2.1 This Chapter discusses the potential benefits of the proposed Agreement for Australia and India.

2.2 The proposed *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Technology* (the proposed Agreement) if ratified, will be part of India's efforts to overcome its energy poverty through the expansion of electricity generation.

2.3 In principle, the export of Australian uranium to India will result in significant benefits to both Australia and India.

2.4 Australia has large reserves of uranium ore and a number of mining companies keen to exploit this resource, with resulting jobs and export revenues. India has a large population, a lack of electrical generating capacity, and a commitment to tackle the problem. India does not have a significant domestic supply of uranium, so must obtain it internationally.[1]

The benefits

2.5 India's plan to expand electricity generation over the next few decades will, according to the Minerals Council of Australia (MCA):

> … deliver significant economic benefits to Australia. Australia is home to almost a third of the world's uranium resources, and India promises to be one of several growing markets for uranium fuel for nuclear power.[2]

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1 Minerals Council of Australia (MCA), *Submission 9*, p. 1.

2 Dr Vanessa Guthrie, Board Member, Minerals Council of Australia (MCA), *Committee Hansard*, Canberra, 9 February 2015, p. 13.

2.6 India does not have sufficient domestic uranium reserves to meet its demands for nuclear fuel, and currently sources its uranium from Kazakhstan and Uzbekistan, predominantly.[3]

2.7 Should India's nuclear power generated electricity sector expand as expected, India will be dependent on uranium imports, providing a reliable long term income stream for Australia's uranium exporters.[4] The MCA believes that Australia could provide up to one third of the uranium India will require into the future.[5]

2.8 In terms of the size of this market:

> … Australian uranium sales to India by 2030 could be between 1,000 and 2,000 tonnes, worth between $100 million and $225 million in export earnings. The total additional revenue through to 2030 could be between $750 million up to $1.5 billion to the Australian economy.[6]

2.9 By way of comparison, according to the MCA, the uranium mining sector in Australia earned $622 million in 2013.[7]

2.10 In specific terms, the sale of uranium to India is likely to facilitate an estimated increase in capacity from the established uranium mines in South Australia. The South Australian Chamber of Mines and Energy claims that capacity in South Australia could increase to 17,500 tonnes of ore, worth $1.4 billion in revenue.[8]

2.11 In Western Australia, the sale would support the establishment of a new mining industry, with four mines under regulatory consideration at present.[9] One of these is located at Wiluna, 1,000km north of Perth. The company involved, Toro Energy, expects that, should the mine be approved, it will have a life span of 20 years and will produce 1,200 tonnes of uranium oxide concentrate per year.[10]

2.12 One of the advantages Toro Energy considers will arise from the proposed mine is a generation's worth of jobs, income and business opportunities for the local Wiluna community.[11]

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3 Dr Guthrie, MCA, *Committee Hansard*, Canberra, 9 February 2015, p. 13.

4 Dr Robert Floyd, Director General, Australian Safeguards and Non-Proliferation Office (ASNO), Department of Foreign Affairs and Trade, *Committee Hansard*, Canberra, 12 February 2015, p. 1.

5 Dr Guthrie, MCA, *Committee Hansard*, Canberra, 9 February 2015, p. 13.

6 Dr Guthrie, MCA, *Committee Hansard*, Canberra, 9 February 2015, p. 13.

7 Dr Guthrie, MCA, *Committee Hansard*, Canberra, 9 February 2015, p. 14.

8 South Australian Chamber of Mines and Energy, *Submission 18*, p. 1.

9 Western Australian Chamber of Minerals and Energy, *Submission 19*, p. 2.

10 Toro Energy, *Submission 17*, p. 2.

11 Toro Energy, *Submission 17*, p. 2.

2.13 The Queensland Government introduced a ban on uranium mining in March 2015. The Queensland mining industry may not be in a position to benefit from the increase in uranium sales should the proposed Treaty be ratified. The Queensland uranium mining industry has estimated that the ban has prevented the extraction of $6 billion in uranium ore.[12]

2.14 Across Australia, the sale of uranium to India is expected to significantly increase employment in the uranium mining sector, with jobs being created particularly in rural and regional areas. In 2013, the MCA estimated that there were 4,200 jobs in uranium mining in Australia. Should the sale of uranium to India go ahead, the MCA expects that the number of those employed will nearly double to 8,000.[13]

Electricity generating capacity in India

2.15 India is the fourth largest energy consumer in the world.[14] However, India also has one of lowest levels of per capita energy consumption in the world.[15] The problems that characterise India's electricity supply include:

- rolling blackouts as a result of a lack of generating capacity;
- 404 million people (30 per cent of the population) without access to any electrical supply;[16] and
- a predicted rise in demand for electrical supply of 70 per cent between 2012 and 2020.[17]

2.16 In 2001, electricity consumption in India was 408kWh[18] per capita a year compared to the OECD average of 7,879kWh per capita a year.[19] Further, India's per capita consumption is one fifth of China's.[20]

2.17 To provide some sense of the amount of per capita electricity available to people in India, 408kWh a year is enough to run a refrigerator for eight months out of every twelve.[21]

12 Australian Mining, 18 March 2015, 'Investor Confidence Shaken after QLD Mining Ban', <http://www.miningaustralia.com.au/news/investor-confidence-shaken-after-qld-uranium-minin>, viewed 11 August 2015.

13 Dr Guthrie, MCA, *Committee Hansard*, Canberra, 9 February 2015, p. 14.

14 MCA, *Submission 9*, p. 1.

15 Government of India Department of Nuclear Energy, *Strategy for Growth of Electricity in India – Introduction*, <http://www.dae.nic.in/?q=node/124>, viewed 20 January 2015.

16 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 12 February 2015, p. 1.

17 MCA, *Submission 9*, p. 2.

18 kWh (kilowatt hours) is a measure of electrical usage over time.

19 Government of India Department of Nuclear Energy, *Strategy for Growth of Electricity in India – Introduction*, <http://www.dae.nic.in/?q=node/124>, viewed 20 January 2015.

20 Mr John Carlson, *Submission 1*, p. 1.

2.18 Coal power stations generate one half of India's electricity. Other sources of power include: hydroelectric power (16 per cent), other renewables (12.7 per cent), natural gas (9 per cent), and nuclear (1.9 per cent).[22]

2.19 In addition, India's electrical grid losses are very high at over 23 per cent of generated electricity.[23] The Uniting Church of Australia Justice and International Commission, Synod of Victoria and Tasmania notes that India could achieve its energy objectives to the year 2020 by improving the efficiency of the electricity grid alone.[24]

2.20 The Indian Government believes that Indian electricity consumption per capita will increase to 5,300kWh per year in 2052, with a large contribution coming from nuclear power.[25] India's energy policy is aimed at securing adequate energy supplies to meet this demand.[26]

2.21 According to Crispin Rovere:

> For India, nuclear power supports broader efforts to lift hundreds of millions of people out of abject poverty.[27]

2.22 The Indian Government is prioritising nuclear power generated electricity over coal. Compared to coal, nuclear power results in insignificant carbon emissions. If the projected increase in nuclear generating capacity were met by coal, it would result in over 300 million metric tonnes of carbon dioxide emissions a year.[28]

Increasing nuclear generation

2.23 India's civilian nuclear program was established in 1954, with the creation of the Government of India Department of Nuclear Energy and Atomic

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21 Government of the United States of America, Department of Energy, *Energy Saver: Household Appliances*, <http://energy.gov/energysaver/articles/tips-appliances>, viewed 17 June 2015.

22 Mr Carlson, *Submission 1*, p. 1.

23 Mr Carlson, *Submission 1*, p. 1.

24 The Uniting Church of Australia Justice and International Commission, Synod of Victoria and Tasmania, *Submission 8*, p. 6.

25 Government of India Department of Nuclear Energy, *Strategy for Growth of Electricity in India – Electricity Demand Projection*, <http://www.dae.nic.in/?q=node/128>, viewed 20 January 2015.

26 MCA, *Submission 9*, p. 1.

27 Mr Crispin Rovere, *Committee Hansard*, Melbourne, 18 May 2015, p. 7.

28 United States Energy Information Administration, *Carbon Dioxide Emission Factors for Coal*, <http://www.eia.gov/coal/production/quarterly/co2_article/co2.html>, viewed on 21 July 2015; and the European Nuclear Fuel Society, *Fuel Comparison*, <https://www.euronuclear.org/info/encyclopedia/f/fuelcomparison.htm>, viewed on 21 July 2015.

Energy Commission. Civilian nuclear reactors are run by a Government owned enterprise, the Nuclear Power Corporation of India.[29]

2.24 The World Nuclear Association indicates that India is anticipating supplying 25 per cent of its electrical power through nuclear power generation by 2050, which represents a more than 600 per cent increase. India's nuclear reactors supplied 5.3 GW[30] of electricity in 2014. This is projected to increase to 1,094 GW in 2050.[31] By way of comparison, this is ten times the current installed nuclear capacity of the United States.[32]

2.25 The increase will require the construction on average of seven reactors every year from now until 2050.[33]

2.26 By 2025 the Australian Safeguards and Non-Proliferation Office (ASNO) believes that India's uranium import requirement should grow to around 2,000 tonnes of uranium oxide each year valued at about $200 million.[34]

2.27 Given the size of the Indian population and the anticipated increase in per capita demand, Crispin Rovere argues that a failure on India's part to meet its nuclear power electricity generation target will result in that demand being met through coal power generation, with resulting increases in greenhouse gas emissions of a scale sufficient to impact global levels of greenhouse gasses.[35]

2.28 In fact, if India were to use coal to generate the quantum of electricity planned to be generated by nuclear power, this would conservatively produce 315 million metric tonnes of carbon dioxide emissions a year.[36]

2.29 None of the participants in the inquiry advocated coal as an alternative to nuclear power for India's energy demands. The Australian Conservation Foundation (ACF) summarised the general view:

> ...Coal is cheap and nasty. It is effective. It generates power. India now is overwhelmingly coal dependent. So yes: for unit price, it would be cheaper. In the long run, it is absolutely not going to be

29 Government of India Department of Nuclear Energy, *About us*, <http://www.dae.nic.in/?q=node/634>, viewed 20 January 2015.

30 GW refers to Gigawatts, a measure of electrical generation.

31 MCA, *Submission 9*, p. 2.

32 Mr Carlson, *Submission 1*, p. 1.

33 Mr Carlson, *Submission 1*, p. 1.

34 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 12 February 2015, p. 1.

35 Mr Rovere, *Submission 2*, p. 5.

36 Calculated using figures from the United States Energy Information Administration, *Carbon Dioxide Emission Factors for Coal*, <http://www.eia.gov/coal/production/quarterly/co2_article/co2.html>, viewed on 21 July 2015; and the European Nuclear Fuel Society, *Fuel Comparison*, <https://www.euronuclear.org/info/encyclopedia/f/fuelcomparison.htm>, viewed on 21 July 2015.

> cheaper, because it is a massive contributor to greenhouse pollution, to particulate pollution, to asthma and to all sorts of things. It is a massive fast-tracker of climate change, and many of the plants are old and will need to be retired. They do not have the capacity to upgrade to meet what are ambitious energy production targets. [37]

Opposition to uranium exports

2.30 A number of participants to the inquiry are strongly opposed to the export of Australian uranium to India. Amongst those opposed are: Friends of the Earth;[38] the ACF;[39] the Uniting Church of Australia Justice and International Commission;[40] the Gundjeihmi Aboriginal Corporation;[41] and the International Campaign to Abolish Nuclear Weapons (Australia).[42]

2.31 Participants opposed to the export of uranium argue that it is unnecessary to export uranium to India because India has a large and thriving renewable energy sector that could meet the expected demand for power in India.[43] For example, ACF argues:

> …There is no question that, while the Indian government is pursuing nuclear expansion, it is also assertively pursuing renewable energy development. We would strongly say that that is the way to go and that is the path to prioritise and take. There are 50,000 solar technicians being trained now in India. The Modi government, according to Bloomberg of March this year, is planning a $200 billion investment. It is the seventh-largest clean energy investor in the world. [44]

2.32 The Uniting Church of Australia Justice and International Commission argues:

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37 Mr Dave Sweeney, Nuclear Free Campaigner, Australian Conservation Foundation (ACF), *Committee Hansard*, Melbourne, 18 May 2015, p. 15.

38 Friends of the Earth (FoE), *Submission 14*, p. 1.

39 Australian Conservation Foundation (ACF), *Submission 5*, p. 1.

40 The Uniting Church, *Submission 8*, p. 1.

41 Gundjeihmi Aboriginal Corporation, *Submission 12*, p. 1.

42 International Campaign to Abolish Nuclear Weapons (Australia), *Submission 10*, p. 1.

43 The Uniting Church, *Submission 8*, p. 7.

44 Mr Sweeney, ACF,, *Committee Hansard*, Melbourne, 18 May 2015, p. 15.

> India is able to double its generation from renewable energy from 25 gigawatts to 55 gigawatts by 2017. They believe that is possible, although ambitious.

2.33 The Uniting Church cited modelling conducted by the International Energy Agency showing that there can be a fourfold increase in energy production by 2050, with fossil fuel use falling from 80 per cent of energy needs to 25 per cent.[45]

2.34 Renewable energy sources are, according to the Uniting Church, also better placed to provide power to the 400 million Indians without access to the electricity grid:

> … one of the issues of India's vast size is actually getting electricity to the people who need it. Often, therefore, locally produced resources are needed. Certainly, to meet the needs of that [400] million, a significant part will be locally generated power, as opposed to centrally generated by things like nuclear power stations.[46]

Conclusion

2.35 From Australia's perspective, selling uranium to India would double the size of an export industry, both in terms of income and employment opportunities. Moreover, it will do so in regional and remote Australia at a time when lower commodity prices are having an economic impact on these regions.

2.36 India's proposed expansion in electricity generating capacity of all types is prodigious to say the least. While a number of participants to the inquiry doubt that India has the capacity to undertake such an expansion, the Indian public, who generally consider themselves citizens of an emerging world power, are unlikely to settle for an average electricity supply per capita that does not run a fridge, let alone lighting, hot water and other utilities that together are considered to constitute to a reasonable standard of living.

2.37 The evidence presented to the Committee shows that the Indian Government is well aware of the significance of keeping greenhouse gas emissions to a minimum while increasing electricity supply. It is clear from the evidence presented that the Indian Government has as great a commitment to renewable energy as it does to nuclear energy.

45 Dr Mark Zirnsak, Director, Justice and International Mission, Uniting Church of Australia, Synod of Victoria and Tasmania, *Committee Hansard*, Melbourne, 18 May 2015, p. 2.

46 Dr Zirnsak, Uniting Church, *Committee Hansard*, Melbourne, 18 May 2015, p. 2.

2.38 Nevertheless, the Indian Government considers that a spectrum of energy sources will be necessary to meet the expected demand for electricity from the 400 million Indians without access to the electricity grid, and nuclear energy is a part of that spectrum.

2.39 Regardless of the quantum of India's future energy needs met by renewables, the evidence indicates that part of the projected increase in electricity generation will be met by either nuclear power or coal. Of those two generating options, nuclear is clearly the better. It will at least reduce, if not eliminate, the measurable increase in greenhouse gas emissions that would result from the use of coal.

2.40 In principle, therefore, the Committee supports the sale of uranium to India.

2.41 The Committee will now examine the Agreement in detail.

3

The Agreement

Background

3.1 The proposed *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* (the proposed Agreement) is intended to permit the export of Australian uranium to India and create reciprocal obligations regarding the application of safeguards and physical security to the transfer and use of nuclear and associated material.[1]

3.2 This Chapter contains a description of the proposed Agreement, and will feed into the discussion of the issues arising out of the Agreement, particularly in Chapter 6 of the Report, which will deal with some of the specific provisions of the proposed Agreement.

3.3 According to the Australian Safeguards and Non-proliferation Office (ASNO):

> Australia has looked at the issue of uranium sales to India on a number of occasions. In the latter part of the Howard government, the then government made a decision that it would be willing to pursue nuclear cooperation with India. In the Rudd government, that decision was then reversed and the important steps leading up to where we are now was that, in December of 2011, the ALP National Conference changed their policy, thus supporting the possibility of uranium sales to India. The Gillard government then, in October of 2012, announced the commencement of negotiations. The first negotiations were held on 19 March 2013 and have

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1 National Interest Analysis, [2014] ATNIA 22, *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy*, [2014] ATNIF 26, (hereafter referred to as the NIA), para 3.

> continued on for the treaty, the Nuclear Cooperation Agreement as well as the administrative arrangement since then. So that has gone across a couple of governments.[2]

3.4 The Minerals Council of Australia (MCA) is also keen to emphasise the fact that the negotiations for the proposed Agreement have been authorised by both Coalition and Australian Labor Party Governments:

> Putting in place the nonproliferation infrastructure to facilitate uranium sales to India comes with bipartisan support. The agreement has been several years in the making, and we commend the former government as well as the current Abbott government for delivering this agreement.[3]

The Agreement

3.5 The proposed Agreement recognises India's commitment to the development and use of nuclear energy for peaceful purposes with a view to achieving sustainable development and strengthening energy security including fuel reserves, and the role Australia could play as a long term reliable supplier of uranium to India.[4]

3.6 The proposed Agreement also notes that the parties share common concerns and objectives regarding non-proliferation of nuclear weapons and their delivery systems.[5]

3.7 The preamble states:

> … UNDERLINING their shared belief that international cooperation in the use of nuclear energy for peaceful purposes should be consistent with the objectives of non-proliferation of nuclear weapons and with the respective international obligations of states; …[6]

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2 Dr Robert Floyd, Director General, Australian Safeguards and Non-Proliferation Office (ASNO), Department of Foreign Affairs and Trade, *Committee Hansard*, Canberra, 15 June 2015, p. 3.

3 Dr Vanessa Guthrie, Board Member, Minerals Council of Australia (MCA), *Committee Hansard*, Canberra, 9 February 2015, p. 14.

4 *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy*, [2014] ATNIF26 (hereafter referred to as the proposed Agreement), preamble.

5 The proposed Agreement, preamble.

6 The proposed Agreement, preamble.

3.8 The preamble also affirms the signatories' support for the objectives of the Statute of the International Atomic Energy Agency (IAEA).[7]

3.9 The National Interest Analysis (NIA) points out that Australia's nuclear cooperation agreements, while broadly similar, do vary according to the requirements of each case, including whether the other party is a signatory of the Nuclear Non-proliferation Treaty (NPT). Specifically, the NIA claims:

> The provisions of the proposed Agreement would implement Australia's policies for the safeguarding and accountability of supplied nuclear materials for the case of India.[8]

3.10 Article II of the proposed Agreement defines cooperation in the peaceful uses of nuclear energy in the following terms:

- the supply of uranium;
- the production and application of radioisotopes and radiation in industry, agriculture, medicine and the environment;
- nuclear safety, radiation and environment protection and management of radioactive waste;
- safe, secure, sustainable safeguarded use of civil nuclear energy, including regulatory and technological advancements; and
- any other areas of cooperation to be determined in writing between the parties.[9]

3.11 The proposed Agreement foreshadows cooperation taking the following forms:

- the supply of:
  - ⇒ nuclear materials, non-nuclear materials, equipment, components and technology;
  - ⇒ equipment produced by the application of transferred technology;
  - ⇒ nuclear material and non-nuclear material produced by the transferred equipment or technology; and
  - ⇒ nuclear material that is produced or processed by the use of any nuclear material or non-nuclear material subject to the proposed Agreement;
- exchange and training of personnel;
- organisation of symposia and seminars;
- provision of relevant technical assistance and services;

7 The proposed Agreement, preamble.

8 NIA, para 14.

9 The proposed Agreement, Article II.

- the exchange of scientific and technical information and documentation;
- joint research and development of projects; and
- other forms of cooperation determined in writing by the parties.[10]

3.12 Cooperation in a field specified in Article II would be carried out following a written arrangement between the parties.[11]

3.13 The materials subject to the proposed Agreement remain subject to it until:

- if it is nuclear material, the material has been consumed or diluted in such a way that it is no longer usable for any nuclear activity relevant from the point of view of safeguards, or has become irrecoverable; or
- in the case of all material, it has been transferred beyond the control of Australia or India in accordance with Article IX of the proposed Agreement; or
- the parties mutually agree in writing that the material should no longer be subject to the proposed Agreement.[12]

3.14 The proposed Agreement is to be implemented through authorities designated by the parties. For Australia, the designated authority is ASNO. For India, the designated authority is the Nuclear Controls and Planning Wing of the Department of Atomic Energy.[13]

3.15 Each party to the proposed Agreement will maintain a system of accounting for and control of items subject to the proposed Agreement.[14] Such items will only be transferred to entities that have been authorised by the receiving party's designated authority.[15]

3.16 The proposed Agreement foreshadows visits of experts to the respective territories of the parties for the implementation of the Agreement.[16]

3.17 Agreement states that India will be permitted to process nuclear material subject to the proposed Agreement in facilities meeting IAEA safeguards detailed in the *Arrangements and Procedures Agreed between the United States of America and the Government of India* pursuant to Article 6(iii) of their *Agreement for Cooperation Concerning Peaceful Uses of Nuclear Energy*.[17]

3.18 The processed material can only continue to be used as long as the IAEA Safeguards Agreement with the United States remains in force, and any

10 The proposed Agreement, Article II.
11 The proposed Agreement, Article II.
12 The proposed Agreement, Article III.
13 The proposed Agreement, Article III.
14 The proposed Agreement, Article III.
15 The proposed Agreement, Article III.
16 The proposed Agreement, Article V.
17 The proposed Agreement, Article VI.

fissionable material obtained from processing is used by India '… under Agency safeguards to implement India's planned nuclear energy programme.'[18]

3.19 India must notify Australia when it engages in processing, and must include information 'available to the Government of India on the IAEA safeguards approaches for the facility that is not classified as safeguards confidential' and a confirmation that the physical protection measures required under Article VIII of the proposed Agreement will be applied during processing.[19]

3.20 Processing material subject to the proposed Agreement can be carried out to an enrichment level of less than 20 per cent in the isotope 235 of uranium. Enrichment above this level can be undertaken with Australia's prior consent.[20]

3.21 Article VII, which ASNO considers is a key provision of the proposed Agreement,[21] binds the parties to ensure:

> … that the items subject to this Agreement as well as by-products are used only for peaceful and non-explosive purposes.[22]

3.22 The requirements of the *Agreement between the Government of India and the International Atomic Energy Agency for the Application of Safeguards to Civilian Nuclear Facilities* are to apply to all the items subject to the proposed Agreement so long as they remain under the jurisdiction or control of the parties. According to the proposed Agreement:

> If the IAEA decides that the application of IAEA safeguards is not possible, the Parties shall consult and agree on appropriate verification measures.[23]

3.23 Each party shall ensure that adequate physical protection measures are applied to items subject to the proposed Agreement. This requirement extends to the international carriage of the items.[24]

3.24 The parties are required in their physical protection measures to meet the *Convention on the Physical Protection of Nuclear Material* and the recommendations of the IAEA publication '*Nuclear Security*

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18 The proposed Agreement, Article VI.

19 The proposed Agreement, Article VI.

20 The proposed Agreement, Article VI.

21 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 12 February 2015, p. 7.

22 The proposed Agreement, Article VII.

23 The proposed Agreement, Article VII.

24 The proposed Agreement, Article VIII.

Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities.'[25]

3.25 Items subject to the proposed Agreement will not be transferred beyond the jurisdiction or control of the recipient party without the prior consent of the supplying party, except:

- where the recipient party has received assurances from the third state to which the items are being transferred that IAEA safeguards and physical security protections are in place; and
- where the parties keep and exchange lists of third parties to which transfers have occurred and the nuclear fuel cycle processes that may be applied to the transferred items.[26]

3.26 Dispute settlement under the proposed Agreement will take place through negotiation between the parties.[27]

3.27 The proposed Agreement can be terminated with 12 months' notice. The proposed Agreement states:

> Unless otherwise mutually determined in writing between the Parties, termination or suspension of this Agreement or any cooperation under it for any reason shall not release the Parties from obligations under Articles III, VI, VII, VIII, IX and X of this Agreement in respect of nuclear material, non-nuclear material, equipment, components and technology transferred while the Agreement is in force.[28]

Differences with other Nuclear Cooperation Agreements

3.28 The proposed Agreement differs from other nuclear cooperation agreements to which Australia is a party. The most recent of these is the *Agreement between the Government of Australia and the Government of the United Arab Emirates on Cooperation in the Peaceful Uses of Nuclear Energy*, on which the Committee reported in March 2014.[29] This United Arab Emirates (UAE) Agreement will be used as a comparison to identify points of difference.

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25 The proposed Agreement, Article VIII.

26 The proposed Agreement, Article IX.

27 The proposed Agreement, Article XII.

28 The proposed Agreement, Article XIV.

29 Parliament of Australia, Joint Standing Committee on Treaties (JSCOT), *Report 137*, tabled 18 March 2014.

3.29 The following are the key differences between the two agreements:

- the proposed Agreement specifically does not apply to nuclear materials developed independent of the proposed Agreement;
- the proposed Agreement permits reprocessing and enrichment to less than 20 per cent in the isotope 235 of uranium, with enrichment above this level undertaken with Australia's prior consent, while the UAE Agreement does not permit reprocessing;
- in the event of material non-compliance with IAEA standards, the UAE Agreement requires the return of Australian nuclear material, while there is no provision for material non-compliance in the proposed Agreement; and
- the proposed Agreement contains an Article applying key provisions of the Agreement to Australian nuclear materials even if the Agreement is terminated.

3.30 Having described the proposed Agreement's provisions, the Report will now turn to issues associated with nuclear non-proliferation.

4

Nuclear non-proliferation

4.1 In general, aside from inquiry participants with an in-principle opposition to the use of nuclear power, concerns about the proposed *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* (the proposed Agreement) fall into one of three categories:

- India's position as one of the handful of known nuclear weapons states that are not signatory to the *Nuclear Non Proliferation Treaty* (NPT);
- the quality of safety and regulation of India's nuclear industry; and
- concerns about specific provisions in the proposed Agreement.

4.2 This Chapter will examine the issues associated with India's nuclear non-proliferation record in detail, and the following chapters will deal in detail with each of the other categories of concern.

4.3 India tested its first nuclear device in 1974 using plutonium from a Canadian supplied nuclear reactor in contravention of the *Canada-India Reactor Agreement 1956*.[1] India is estimated to possess between 90 and 110 nuclear warheads.[2]

4.4 India is one of three nuclear weapons states that have not signed the NPT. The other nations are Israel and Pakistan.[3] India, Israel and Pakistan are not party to the NPT because the NPT cannot be ratified by a nuclear armed state that conducted its first nuclear weapons test after

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1 Mr John Carlson, *Submission 1*, p 10.

2 Arms Control Association, *Nuclear Weapons, Who Has What at a Glance*, <http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat>, viewed 2 February 2015.

3 Arms Control Association, *Nuclear Weapons, Who Has What at a Glance*, <http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat>, viewed 2 February 2015. North Korea is a signatory to the NPT, but has withdrawn from the Treaty. North Korea is believed to have a small number of nuclear weapons.

1 January 1967. In practical terms, India can only ratify the NPT if it disposes of its nuclear weapons.[4]

4.5 The situation has been recognised by the Australian Safeguards and Non-Proliferation Office (ASNO) for some time. Former ASNO Director-General John Carlson states:

> The reality of course is that India is a de facto nuclear weapons state, and I certainly took the view in my government days that treating India as an outcast was actually achieving nothing.[5]

4.6 Negotiating a nuclear cooperation agreement with India represents a significant change in approach for uranium supplier states like Australia. Following such a path is not without risk, in terms of the stability to the international nuclear non-proliferation architecture, and to the strategic environment of the region.

4.7 On the other hand, nearly forty years of relative isolation from the international nuclear non-proliferation community has not prevented the development of a nuclear reactor electricity generation capacity in India. Nor has it prevented a nuclear arms race on the Indian subcontinent.

4.8 Further, Australia is not alone in negotiating a nuclear cooperation agreement with India. Both Canada and the United States have agreements with India, and the Nuclear Suppliers' Group, a group of uranium exporting states with a commitment to non-proliferation, conditionally agreed to the export of uranium to India in 2007.

The Nuclear Suppliers' Group

4.9 The Nuclear Suppliers' Group's decision took into account the fact that India was strategically placed between two other nuclear weapons states, Pakistan and China, and was not in a position to become a signatory to the NPT because of the specific provisions of that Treaty.

4.10 The Group's decision was conditional on India adopting all of the obligations incumbent upon nuclear weapon states under the NPT. In other words, India would have to become de facto compliant with the NPT.[6]

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4 Mr Carlson, *Submission 1*, p. 5.

5 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 5.

6 Mr Crispin Rovere, *Submission 2*, p. 4.

4.11 Specifically, the Nuclear Suppliers' Group identified the following conditions for the supply of nuclear material to India:

- India's civil and military nuclear facilities must be separate, with the civil nuclear facilities placed under International Atomic Entergy Agency (IAEA) safeguards (India has concluded an *Agreement between the Government of India and the International Atomic Energy Agency for the Application of Safeguards to Civilian Nuclear Facilities)*;
- India must have in place an IAEA Additional Protocol on safeguards with respect to civil nuclear facilities;
- India must maintain its unilateral moratorium on nuclear testing;
- India must work towards concluding a fissile material cut-off treaty;[7] and
- India will refrain from transferring uranium enrichment and plutonium processing technologies to states that do not have them.[8]

4.12 The Group's decision to conditionally allow the sale of uranium to India occurred at the urging of the United States, which had just concluded a nuclear cooperation agreement with India.[9]

4.13 In relation to whether India has met the conditions set out by the Nuclear Suppliers' Group, ASNO states:

> … India has fulfilled all of these six elements that were the conditions for the Nuclear Suppliers Group.[10]

4.14 Prior to the 2007 decision by the Nuclear Suppliers' Group, Australia only exported nuclear material to countries that were party to the NPT. Consequently, access to nuclear materials became an incentive to join the NPT, and over time the supply of nuclear materials has become a mechanism conferring legitimacy on a recipient state's nuclear activities.[11]

7 A treaty committing the signatory to stop producing nuclear weapons materials.

8 Minerals Council of Australia (MCA), *Submission 9*, p. 4.

9 MCA, *Submission 9*, p. 4.

10 Dr Robert Floyd, Director General, Australian Safeguards and Non-Proliferation Office (ASNO), Department of Foreign Affairs and Trade, *Committee Hansard*, Canberra, 15 June 2015, p. 4.

11 Mr Rovere, *Submission 2*, p. 3.

The Nuclear Non-Proliferation Treaty

4.15 Nuclear weapons states are classified according to whether they are signatories to the NPT. Nuclear weapons states that are signatories to the NPT are: the United States; Russia; France; the United Kingdom; and China.[12] Significantly, the NPT requires parties to:

> … pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament …[13]

4.16 The NPT is one of the most effective and respected international treaties:

> It should always be remembered – the fact that only nine countries possess nuclear weapons seventy years after they were first developed is no accident. It is the result of careful policy making, successful negotiation, and the active restraint of far-sighted statesmen over decades.[14]

4.17 The fact that the proposed Agreement involves a nuclear weapons state that is not signatory to the NPT has prompted a number of non-proliferation experts and civil society groups to oppose the proposed Agreement.[15]

4.18 The Australian Conservation Foundation (ACF) submission argues that, in a general sense, any export of nuclear materials to a nuclear weapons state can contribute to that state's development of nuclear weapons by freeing up other nuclear material to be used in weapons.[16]

4.19 In a more specific sense, Associate Professor Tilman Ruff, representing the International Campaign to Abolish Nuclear Weapons (ICAN) argues that:

> The nuclear commerce with a state party that is not a part of the non-proliferation treaty, very significantly, particularly at this crucial time I believe, erodes and undermines the very purpose and bargain that is enshrined in that treaty and seriously would

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12 Arms Control Association, *Nuclear Weapons, Who Has What at a Glance*, <http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat>, viewed 2 February 2015.

13 *Nuclear Non-Proliferation Treaty*, Article VI.

14 Mr Rovere, *Submission 2*, p. 12.

15 For example, Mr Carlson, *Submission 1*, p. 2; Mr Ronald Walker, *Submission 6*, p. 2; Mr Ernst Wilheim, *Submission 23*, p. 1; Professor Lawrence Scheinman, *Submission 13*, p. 1; the Australian Conservation Foundation (ACF), *Submission 5*, p. 2; The Uniting Church of Australia Justice and International Commission, Synod of Victoria and Tasmania, *Submission 8*, p. 2; and Friends of the Earth (FoE), *Submission 14*, p. 2.

16 ACF, *Submission 5*, p. 2.

> tarnish Australia's credibility in terms of its seriousness and its commitment to nuclear disarmament and non-proliferation. [17]

4.20 Because the NPT only permits membership of nuclear armed states that conducted nuclear tests before 1967, India can only become a signatory to the NPT if it renounces the manufacture of nuclear weapons and dismantles its nuclear arsenal.[18]

4.21 In addition under the terms of the NPT, there is no scope for another state to test and develop nuclear weapons. A nuclear-weapon state is defined as a state that conducted a nuclear test explosion prior to 1 January 1967.[19]

4.22 John Carlson argues that, while it would be ideal if India disarmed and became a party to the NPT:

> … realistically, they are not going to do that in the current strategic environment. [20]

4.23 The environment to which Mr Carlson is referring is the fact that India borders on and is in occasional conflict with China and Pakistan, both of which possess nuclear weapons.

4.24 In fact, India did not conduct a full round of nuclear weapons tests, and declare itself a nuclear weapons state, until it was clear that Pakistan, with China's assistance, was about to do the same.[21]

4.25 In other words, the problem India has with the NPT is that as a result of the application of an arbitrary date, 1 January 1967, one emerging global power, China, is permitted to possess nuclear weapons, while another, India, is not.

4.26 Because, in the current environment, it is not realistic for India to relinquish its nuclear weapons, there is no practical way India can become a signatory to the NPT.[22]

4.27 According to John Carlson, India views the NPT as inherently discriminatory:

> … because it divides the world into the haves and the have-nots—the nuclear-weapon states and the others…[23]

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17 Associate Professor Tilman Ruff, International Campaign to Abolish Nuclear Weapons (Australia) (ICAN), *Committee Hansard*, Melbourne, 18 May 2015, p. 14.

18 Mr Carlson, *Submission 1*, p. 5.

19 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 8.

20 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 8.

21 Mr Rovere, Crispin, *Submission 2*, p. 3.

22 Mr Carlson, *Submission 1*, p. 5.

23 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 8.

4.28 Crispin Rovere summarises India's dilemma as follows:

> The key point is that India is very sensitive to any perceived bias by the international community that India is less than an emerging Great Power on par with the United States and China.[24]

4.29 The Indian people consider India to be a burgeoning great power with all that means for the international system and India's status as a nuclear weapons state in the long term.[25]

4.30 ASNO has recognised that India is a de-facto nuclear weapons state for some time. Former ASNO Director-General, John Carlson states:

> My view has always been that we have to do something else with India now, that there is no point in flogging a dead horse.[26]

4.31 This view is not held by the bulk of the signatories to the NPT. Ronald Walker comments that keeping faith with the NPT:

> … amounts to a standard of behaviour and mutual expectations which the countries of the world impose upon each other to reduce the risk of global nuclear war and also the risk of the problems which so often arise over the possession of nuclear weapons.
>
> Without such standards, mutual expectations and controls, peaceful international trade in nuclear material and technology would be impossible.[27]

4.32 The Uniting Church of Australia Justice and International Commission, Synod of Victoria and Tasmania, and Friends of the Earth (FoE) point out that at the 2010 Nuclear Non-Proliferation Treaty Review Conference, 118 non-aligned nations complained that the United States, in reaching a nuclear cooperation treaty with India, had given a country not party to the NPT more benefits than NPT signatories.[28]

4.33 Associate Professor Tilman Ruff, representing ICAN, summarises the potential risks associated with reaching nuclear cooperation agreements with India:

> It has been said before, but it has been said with increasing urgency and reality, that that treaty, which is really the linchpin of the global regime that embodies this crucial obligation on the part

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24 Mr Rovere, *Submission 2*, p. 3.

25 Mr Rovere, *Committee Hansard*, Melbourne, 18 May 2015, p. 7.

26 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 5.

27 Mr Walker, *Committee Hansard*, Canberra, 9 February 2015, p. 9.

28 The Uniting Church of Australia Justice and International Commission, Synod of Victoria and Tasmania, *Submission 8*, p. 4; and FoE, *Submission 14*, p. 5.

> of the nuclear arms states to disarm in exchange for those who do not have the weapons not acquiring them, is really at risk of unravelling.[29]

Comprehensive test ban treaty

4.34 India is not a party to the *Comprehensive Nuclear Test Ban Treaty* (CTBT). However, India has undertaken a unilateral moratorium on weapons testing.[30]

4.35 According to Crispin Rovere, India has a strong incentive to abrogate its moratorium. India has not successfully detonated a thermonuclear (hydrogen) device[31], and is therefore concerned about the effectiveness of its deterrent.[32]

4.36 At present, China has nuclear superiority over India, both in terms of the number of warheads and in terms of having successfully exploded a thermonuclear device. Mr Rovere argues that India may feel it necessary to test a thermonuclear device in order to achieve parity with China.[33]

Missed opportunities

4.37 A number of participants to the inquiry view the proposed Agreement as a missed opportunity to obtain greater non-proliferation concessions from India.[34]

4.38 Crispin Rovere argues:

> … it is critical that we ask India to undertake all the obligations they would have if they were a party to the NPT as a nuclear armed state, and in this treaty we have not done that.[35]

4.39 John Carlson compares the proposed Agreement with that negotiated with France in 1982. At the time, France was not a signatory to the NPT, but the

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29 Associate Professor Ruff, (ICAN) *Committee Hansard*, Melbourne, 18 May 2015, p. 13.

30 Mr Rovere, *Submission 2*, p. 6.

31 Thermonuclear, or hydrogen, devices are an order of magnitude more powerful than nuclear (uranium or plutonium) devices.

32 Mr Rovere, *Submission 2*, p. 6.

33 Mr Rovere, *Submission 2*, p. 6.

34 Mr Carlson, *Submission 1*, p. 3.

35 Mr Rovere, *Committee Hansard*, Melbourne, 18 May 2015, p. 8.

Agreement required France to meet the obligations of the NPT, resulting in France eventually signing the NPT in 1992.[36]

4.40 The key NPT provisions Mr Carlson believes should be applied in the proposed agreement are:

- a commitment to pursue nuclear disarmament;
- a full separation of civilian and military nuclear facilities;
- signing the CTBT;
- real support for a fissile material cut-off treaty; and
- placing all imported nuclear material under IAEA safeguards.[37]

4.41 Crispin Rovere points out that India's need for imported nuclear fuel provides scope for the negotiation of nuclear cooperation agreements that significantly improve nuclear non-proliferation outcomes.

4.42 For example, the proposed Agreement could have required India to ratify the CTBT if the United States Senate does so. This obligation would match an obligation made by China, and would consequently not prejudice India.[38]

4.43 Although an ongoing halt to nuclear weapons testing was one of the Nuclear Suppliers' Group's conditions for the sale of nuclear materials to India, the proposed Agreement does not specifically provide that supplies of nuclear materials will cease in the event of India resuming weapons testing.[39]

4.44 However, during the public hearings, ASNO gave a strong indication that the Australian Government would consider a resumption of nuclear testing to be a breach of the proposed Agreement:

> … if India were to conduct a nuclear test, Australia could invoke article 14 to cease cooperation and potentially to terminate the agreement immediately.[40]

36 Mr Carlson, *Submission 1*, p. 2.

37 Mr Carlson, *Submission 1*, pp. 3–4.

38 Mr Rovere, *Submission 2*, p. 8.

39 Mr Rovere, *Submission 2*, p. 6.

40 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 12 February 2015, p. 2.

The way forward

4.45 The evidence before the Committee indicates that nuclear cooperation with India is probably the biggest issue in nuclear non-proliferation for some decades.

4.46 The evidence suggests that nuclear cooperation with India is opposed by the bulk of signatories to the NPT and may destabilise the international non-proliferation architecture.

4.47 On the other hand, India cannot join the NPT:

> … given that it has a more powerful strategic nuclear rival on its border, China, and a much weaker, unstable nuclear rival on another border, Pakistan, it is not realistic to ask them to do that.[41]

4.48 Forty years of isolation under the NPT has not produced nuclear disarmament on the Indian subcontinent. In essence, the proposed Agreement is an effort to try a different approach. Australia is not alone in adopting this new approach. In reaching its decision to allow the export of nuclear materials to India, the Nuclear Suppliers' Group:

> … wanted to see India brought more into the nuclear non-proliferation mainstream.[42]

4.49 According to John Carlson, states that have negotiated nuclear cooperation agreements with India:

> … are prepared to supply India for civil purposes for two reasons: one is to see modern, safe technology available in India—I think there is an important nuclear safety aspect to this. Another reason is to encourage India to take up international norms in this area—things like no testing and so on.[43]

4.50 India's need for nuclear materials could produce compounding pressure on the Indian Government to meet international non-proliferation norms:

> … the more India becomes dependent for power generation on imported technology and imported fuel, the more this acts as a moderating factor on its behaviour. It would make India hesitate to, for instance, conduct further nuclear tests if the consequence would be an immediate cut-off of fuel for all the imported reactors.[44]

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41 Mr Rovere, *Committee Hansard*, Melbourne, 18 May 2015, p. 8.

42 Dr Floyd, ASNO, *Committee Hansard*, 15 June 2015, p. 6.

43 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 5.

44 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 5.

4.51 Further:

> Bringing India into this tradition will continue to underpin the assurance of peaceful use and allow the two nations to work together on enhancing the non-proliferation and safeguards system.[45]

4.52 The Committee believes that, as an approach to non-proliferation, engaging with India to bring it into the nuclear non-proliferation mainstream will only work if India makes genuine non-proliferation advances. Only genuine non-proliferation advances will ameliorate the potential risk to the non-proliferation framework perceived by the bulk of signatories to the NPT.

4.53 Consequently, should the proposed Agreement be ratified, the Committee urges the Australian Government to commit significant diplomatic resources to encouraging India to become a party to the CTBT, and to negotiate a fissile material cut-off treaty.

Recommendation 1

4.54 **The Committee urges the Australian Government to commit significant diplomatic resources to encouraging India to become a party to the Comprehensive Test Ban Treaty, and to negotiate a fissile material cut-off treaty.**

4.55 Further, the Committee recommends the Government consider facilitating the negotiation of a nuclear arms limitation treaty for the Indian subcontinent region. Such a treaty could feasibly have an initial goal of preventing the development of thermonuclear weapons by India and Pakistan, and prevent the deployment of such weapons to the region by China.

45 Dr Vanessa Guthrie, Board Member, Minerals Council of Australia, *Committee Hansard*, Canberra, 9 February 2015, p. 14.

Recommendation 2

4.56 **The Committee recommends the Australian Government considers facilitating the negotiation of a nuclear arms limitation treaty for the Indian subcontinent region. Such a treaty could feasibly have an initial goal of preventing the development of thermonuclear weapons by India and Pakistan, and prevent the deployment of such weapons to the region by China.**

5

Nuclear safety in India

5.1 India possesses a large and well established nuclear infrastructure.

5.2 India's civilian nuclear program was established in 1954, with the creation of the Government of India Department of Nuclear Energy and the Atomic Energy Commission. Civilian electricity generating nuclear reactors are run by a Government owned enterprise, the Nuclear Power Corporation of India.[1]

5.3 The first electricity generating reactor was brought on line at Tarapur in Mahrashtra in 1969, and at present India has in the vicinity of thirty electricity generating reactors in operation.[2]

5.4 At the time of writing, five reactors in three locations are in development. The reactors under construction are either the 700 megawatt Pressurised Heavy Water Reactor type first built in India in 1973, or the VVER[3] 1,000 megawatt type, a high pressure water reactor first built in India in 2014.[4]

5.5 The first VVER 1,000 megawatt type reactor was constructed in 1975 in the Soviet Union, and is reported to have a number of deficiencies, including:

- substandard wiring of the emergency electrical system and reactor protection system;
- fire protection systems that do not meet current standards;

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1 Government of India Department of Nuclear Energy, *About us*, (http://www.dae.nic.in/?q=node/634), viewed 20 January 2015.

2 Nuclear Power Corporation of India, *Plants under operation*, <http://www.npcil.nic.in/main/AllProjectOperationDisplay.aspx>, viewed 20 January 2015.

3 VVER means Vodo-Vodyanoi Energetichesky Reaktor, or 'water–water power reactor'. It is a more modern type of pressured water reactor.

4 Nuclear Power Corporation of India, *Plants under construction*, <http://www.npcil.nic.in/main/ConstructionDetail.aspx?ReactorID=91>, viewed 21 January 2015.

- deficient quality control in design and construction; and
- a less forgiving and stable reactor system than Western counterparts.[5]

5.6 The VVER reactors are the most modern in use in India and are equivalent to generation III reactors. It is not clear whether the reactors under construction in India incorporate improvements that deal with the identified deficiencies of these reactors.[6]

5.7 The best available reactors at the moment are generation IV reactors such as those being constructed by the United Arab Emirates, recently considered by the Committee.[7]

5.8 Generation IV reactors are expected to be built as a result of India's nuclear cooperation agreement with the United States.[8]

5.9 Evidence to the inquiry identifies three significant issues relating to the safety of nuclear facilities in India:

- the lack of separation between military and civilian nuclear facilities;
- the quality of regulation and oversight of nuclear facilities in India; and
- civil society concerns, such as the treatment of those opposed to the building of nuclear facilities.

5.10 These issues will be discussed in this Chapter.

Separation of Civil and Military nuclear facilities

5.11 As discussed in the previous Chapter, as a prerequisite for the transfer of nuclear materials to India, the Nuclear Suppliers' Group required India to separate its civil and military nuclear facilities and place the civil facilities under International Atomic Entergy Agency (IAEA) safeguards.[9]

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5 United States National Nuclear Safety Administration, International Nuclear Safety Project, *The VVER-1 000*, <http://insp.pnnl.gov/-profiles-reactors-vver1000.htm>, viewed 21 January 2015.

6 United States National Nuclear Safety Administration, International Nuclear Safety Project, *The VVER-1 000*, <http://insp.pnnl.gov/-profiles-reactors-vver1000.htm>, viewed 21 January 2015.

7 Joint Standing Committee on Treaties, *Report 137*, tabled 18 March 2014.

8 Nuclear Power Corporation of India, *Plants under construction*, <http://www.npcil.nic.in/main/ConstructionDetail.aspx?ReactorID=91>, viewed 21 January 2015.

9 Minerals Council of Australia (MCA), *Submission 9*, p. 4.

5.12 In 2009, India concluded with the IAEA the *Agreement between the Government of India and the International Atomic Energy Agency for the Application of Safeguards to Civilian Nuclear Facilities* (the IAEA Agreement).[10]

5.13 The IAEA Agreement is, according to John Carlson, significantly more complex than Australia has dealt with in the past.[11]

5.14 For example, the IAEA Agreement applies only to nuclear materials imported under agreements that specifically apply the provisions of the IAEA Agreement.[12]

5.15 According to John Carlson, Australia has in the past interpreted the *Nuclear Non-Proliferation Treaty* (NPT), to which Australia is bound, as precluding any nuclear exports to countries that do not have a safeguards agreement with the IAEA applying to **all** nuclear material. [13]

5.16 The Australian Safeguards and Non-Proliferation Office (ASNO) explains that:

> The design of IAEA safeguards for India is specific to its situation. On the one hand, the presence of both civil and military nuclear facilities affects the scope of IAEA safeguards in India. But a consequence is that the frequency and intensity of the International Atomic Energy Agency's inspections of India's civil nuclear facilities is in fact greater than for most non-proliferation treaty parties. This offers helpful additional assurance that Australian-obligated nuclear material would not be diverted from peaceful use.[14]

5.17 The IAEA Agreement contains an Annex that lists the facilities that India wishes to place under IAEA safeguards. In effect, this means that there are three categories of nuclear facilities in India for safeguards purposes: military facilities; civilian facilities not covered by the IAEA agreement (or 'unsafeguarded'); and civilian facilities covered by the IAEA agreement ('safeguarded').[15]

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10 *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy*, [2014] ATNIF26, preamble.

11 Mr John Carlson, *Submission 1*, p. 2.

12 Mr Carlson, *Submission 1*, p. 4.

13 Mr Carlson, *Submission 1*, p. 4.

14 Dr Robert Floyd, Director General, Australian Safeguards and Non-Proliferation Office (ASNO), Department of Foreign Affairs and Trade, *Committee Hansard*, Canberra, 12 February 2015, p. 2.

15 Mr Carlson, *Submission 1*, p. 6.

5.18 India's definition of unsafeguarded facilities includes civilian facilities considered to be of strategic national importance, and civilian facilities that are in the same complex as designated military facilities.[16]

5.19 Such facilities include civilian electricity generating fast breeder reactors used to produce military grade plutonium. Mr Carlson argues that the existence of unsafeguarded facilities effectively means that the separation of military and civilian nuclear facilities is a matter of administrative definition, rather than a reality.[17]

5.20 Under the IAEA Agreement, India is able to temporarily designate an 'unsafeguarded' facility as 'safeguarded.'[18]

5.21 According to Mr Carlson:

> The [IAEA] agreement has provisions on substitution of unsafeguarded for safeguarded material, exemption of material from safeguards in certain circumstances…suspension of safeguards, and termination of safeguards.[19]

5.22 At the time the inquiry commenced, the Annex to the IAEA Agreement listed only 14 of India's civilian nuclear facilities as 'safeguarded'. The list in the Annex contradicted statement in the National Interest Analysis (NIA) of the *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* (the proposed Agreement) that all civilian facilities were safeguarded.[20]

5.23 By June 2015, ASNO was able to reassure the Committee that:

> The commitment that India made on the separation of its civilian and military programs was to have 22 facilities that would be brought under IAEA safeguards. They have brought all 22 of those facilities under IAEA safeguards, so they have complied with and completed that process at this point in time.[21]

16 Mr Carlson, *Submission 1*, p. 7.
17 Mr Carlson, *Submission 1*, p. 7.
18 Mr Carlson, *Submission 1*, p. 6.
19 Mr Carlson, *Submission 1*, p. 8.
20 Mr Carlson, *Submission 1*, p. 7.
21 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 15 June 2015, p. 7.

Nuclear regulation

5.24 The Australian Conservation Foundation (ACF) submission points out that, in 2012, the Indian Auditor General released *Report No. - 9 of 2012-13 for the period ended March 2012 - Performance Audit on Activities of Atomic Energy Regulatory Board (Department of Atomic Energy)*, which detailed a number of concerns about the regulation of nuclear energy in India.[22]

5.25 In particular, the Report identified deficiencies in: the independence of the nuclear safety regulator; the quality and number of nuclear safety plans; the adoption of international benchmarks for the inspection of nuclear facilities; and the preparation of decommissioning plans for nuclear power plants.[23]

5.26 In the Report, the Auditor General stated:

> Failure to have an autonomous and empowered regulator is fraught with grave risks as the recent report of the Fukushima Nuclear Accident Independent Investigation Commission has confirmed.[24]

5.27 The Report made a number of recommendations to rectify these deficiencies, including:

- establishing an independent nuclear regulator under law;
- developing required safety procedures expeditiously;
- making use of the IAEA to establish best practice for nuclear power plant inspections; and
- making plans, both administrative and financial, for the decommissioning of nuclear power plants when those plants are constructed.[25]

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22 Australian Conservation Foundation (ACF), *Submission 5*, p. 2.

23 Comptroller and Auditor General of India, *Report No. - 9 of 2012-13 for the period ended March 2012 - Performance Audit on Activities of Atomic Energy Regulatory Board (Department of Atomic Energy)*, pp VI-IX. <http://www.saiindia.gov.in/english/home/Our_Products/Audit_Report/Government_Wise/union_audit/recent_reports/union_performance/2012_2013/SD/Report_9/Exe_Summ.pdf>, viewed 5 May 2015.

24 Comptroller and Auditor General of India, *Report No. - 9 of 2012-13 for the period ended March 2012 - Performance Audit on Activities of Atomic Energy Regulatory Board (Department of Atomic Energy)*, p 73. <http://saiindia.gov.in/english/home/our_products/audit_report/Government_Wise/union_audit/recent_reports/union_performance/2012_2013/SD/Report_9/Chap_10.pdf>, viewed 24 August 2015.

25 Comptroller and Auditor General of India, *Report No. - 9 of 2012-13 for the period ended March 2012 - Performance Audit on Activities of Atomic Energy Regulatory Board (Department of Atomic Energy)*, pp IX-X. <http://www.saiindia.gov.in/english/home/Our_Products/Audit_Report/Government_Wi

5.28 In relation to the independence of the nuclear regulator in India Dr Mark Zirnsak of the Uniting Church of Australia Justice and International Commission, Synod of Victoria and Tasmania states:

> The concerns that we have raised which have come from analysis out of India, by an Indian academic particularly, have been the lack of independence of the regulatory body, the Atomic Energy Regulatory Board, and that it has been a longstanding recommendation that that body be made independent. Currently, it is still under the authority of the Indian government with the Indian government being able to interfere with, potentially, its operation as such.[26]

5.29 The ACF submission argues that these deficiencies have not been effectively resolved, and that the proposed Agreement should not be ratified until they are resolved.[27]

5.30 The Indian Government's response to the Report indicated that the recommendation would be implemented, and legislation was introduced into the Indian Parliament to establish an independent nuclear regulator.[28]

5.31 The Nuclear Threat Initiative found that India's nuclear materials security conditions could be improved by establishing an independent regulatory agency.[29]

5.32 The Committee also notes that in March 2015, the IAEA published some of the findings of a mission to India to investigate India's regulatory framework. The mission's findings appear to support the ACF's assertions regarding India's failure to rectify deficiencies identified in 2012.[30]

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se/union_audit/recent_reports/union_performance/2012_2013/SD/Report_9/Exe_Summ.pdf>, viewed 5 May 2015.

26 Dr Mark Zirnsak, The Uniting Church of Australia Justice and International Commission, Synod of Victoria and Tasmania, *Committee Hansard*, Melbourne, 18 May 2015, p. 5.

27 ACF, *Submission 5*, p. 2.

28 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 6.

29 Associate Professor Tilman Ruff, International Campaign to Abolish Nuclear Weapons (Australia) (ICAN), *Committee Hansard*, Melbourne, 18 May 2015, p. 14.

30 International Atomic Energy Agency (IAEA), March 2015, *IAEA Mission Concludes Peer Review of India's Nuclear Regulatory Framework*, <https://www.iaea.org/newscenter/pressreleases/iaea-mission-concludes-peer-review-indias-nuclear-regulatory-framework>, viewed 5 May 2015.

5.33 For example, the IAEA mission found that:

- the Indian nuclear regulatory agency was still not independent under law;
- the existing policies and arrangements at the nuclear regulator needed to be reviewed to ensure its independence;
- the frequency and quality of inspections at nuclear facilities was still not up to best practice standards; and
- there was still insufficient planning for the decommissioning of nuclear facilities.[31]

5.34 India's apparent failure to rectify specific problems that have been identified by a number of credible entities over a number of years is a concern to the Committee.

5.35 The Committee notes that, in Japan, despite an apparently robust regulatory environment, breaches of regulations contributed to the Fukushima facility accident. Australian nuclear material was in use at the Fukushima facility at the time of the accident.

5.36 The Committee believes that the Australian Government cannot overlook such clear warnings about the quality of India's nuclear regulatory framework.

5.37 Consequently, the Committee recommends that, should the proposed Agreement be ratified, uranium sales to India only commence when the following conditions are met:

- India has achieved the full separation of civil and military nuclear facilities as verified by the IAEA;
- India has established an independent nuclear regulatory authority under law;
- the Indian nuclear regulator's existing policies and arrangements have been reviewed to ensure its independence;
- the frequency, quality and comprehensiveness of onsite inspections at nuclear facilities have been verified by the IAEA as being best practice standard; and
- the lack of sufficient planning for the decommissioning of nuclear facilities has been rectified.

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31 IAEA, March 2015, *IAEA Mission Concludes Peer Review of India's Nuclear Regulatory Framework*, <https://www.iaea.org/newscenter/pressreleases/iaea-mission-concludes-peer-review-indias-nuclear-regulatory-framework>, viewed 5 May 2015.

Recommendation 3

5.38 **Committee recommends that, should the *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* be ratified, uranium sales to India only commence when the following conditions are met:**

- **India has achieved the full separation of civil and military nuclear facilities as verified by the IAEA;**
- **India has established an independent nuclear regulatory authority under law;**
- **the Indian nuclear regulator's existing policies and arrangements have been reviewed to ensure its independence;**
- **the frequency, quality and comprehensiveness of onsite inspections at nuclear facilities have been verified by the IAEA as being best practice standard; and**
- **the lack of sufficient planning for the decommissioning of nuclear facilities has been rectified.**

6

Specific provisions

6.1 In Chapter Three, the Committee noted the Australian Safeguards and Non-Proliferation Office's (ASNO's) assertion that, while particular provisions of the *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* (the proposed Agreement) differ from those contained in other Australian nuclear cooperation agreements, the actual outcome will be the same.

6.2 This assertion is extensively contested by participants in the inquiry.

6.3 Debate about the proposed Agreement itself revolves around a number of specific issues:

- accounting for Australian nuclear materials;
- the mixing of safeguarded and unsafeguarded materials in Indian nuclear facilities;
- reprocessing Australian nuclear materials;
- enrichment of Australian nuclear materials;
- the Additional Protocol to the *Agreement between the Government of India and the International Atomic Energy Agency for the Application of Safeguards to Civilian Nuclear Facilities;*
- conflict resolution and
- the legality of the proposed Agreement.

6.4 These matters will now be considered individually.

Accounting for Australian nuclear material

6.5 Article III of the proposed Agreement requires each party to maintain a system of accounting for and control of items subject to the Agreement.[1]

6.6 John Carlson provides the following background to this provision:

> This terminology relates to the mechanisms for identifying which specific batches of nuclear material are subject to the agreement. Accounting and tracking are essential on legal grounds—otherwise, the agreement will have no practical effect. They are also needed to meet the requirements of our Safeguards Act. The agreement expressly requires each party to maintain an accounting system for materials subject to the agreement.

6.7 The requirement on countries that receive Australian uranium to track and account for that uranium and its by-products is a cornerstone of Australian nuclear cooperation agreements. It permits Australia to be satisfied that the non-proliferation and safety aspects of Australia's nuclear cooperation agreements are being adhered to.

6.8 Australian tracking and accounting provisions exceed those required by the International Atomic Energy Agency (IAEA) in its safeguards agreements. The IAEA safeguards agreements only require that all uranium and its by-products be accounted for. Tracking on the basis of the source country of the uranium is not required by the IAEA.[2]

6.9 Nevertheless, a number of jurisdictions, including the United States and Europe, do as a matter of course track and account for nuclear material by source country for all imported nuclear materials.[3]

6.10 The specifics of the accounting system for each nuclear cooperation agreement are developed as part of the Administrative Arrangement related to the agreement. The Administrative Arrangement is an unpublished document.[4]

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1 *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy*, [2014] ATNIF26 (hereafter referred to as the proposed Agreement), Article III.

2 Mr John Carlson, *Submission 1.2*, p. 3.

3 See for example Article 9 of the *Agreement between the Government of Australia and the Government of The United States of America Concerning Peaceful Uses of Nuclear Energy*; and Article 79 of the EURATOM Treaty and EURATOM Commission Regulation 302/2005.

4 See for example the proposed Agreement, Article II.

6.11 The wording of Article III has been understood by a number of witnesses, including John Carlson[5] and Ronald Walker[6] as permitting India to establish its own system of accounting and control that may not meet Australian standards but will meet International Atomic Energy Agency (IAEA) standards.

6.12 The Indian Government appears to have had some difficulties agreeing to an accounting system that could track nuclear material by source country. John Carlson, writing in early November 2014, cited stalled negotiations between the United States and India over an administrative agreement made under their nuclear cooperation agreement because of an apparent refusal by India to account for United States nuclear materials.[7]

6.13 Further, during negotiations for the proposed Agreement in 2013, the ABC reported that Indian negotiators were concerned about this aspect of Australia's policy because Indian nuclear regulators did not have the capacity to undertake such accounting.[8]

6.14 According to Mr Carlson:

> … if [Australian nuclear material] is not identified and accounted for as such, the conditions of the agreement will be readily evaded...[9]

6.15 The Committee considered for some time how it could satisfy itself that such a critical matter as the specifics of the tracking and accounting arrangements would be in Australia's national interest.

6.16 The method arrived at was to assess, by way of a private briefing from the Director-General of ASNO, Dr Robert Floyd, and through questioning at the final hearing, whether negotiations over the Administrative Arrangement had reached a point where Dr Floyd was satisfied that he could comply with his obligations under section 51 of the *Nuclear Non-Proliferation (Safeguards) Act of 1987* (the Act).[10]

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5 Mr Carlson, *Submission 1*, p. 16.

6 Mr Ronald Walker, *Submission 6.4*, p. 2.

7 Mr Carlson, *Submission 1*, p. 11. The United States has subsequently announced that it has completed negotiations on an Administrative Arrangement with India.

8 Ms Stephanie March, 'Nuclear deal: Australia's uranium deal with India may include weaker monitoring safeguards,' ABC, 19 November 2013, <http://www.abc.net.au/news/2013-11-19/australia27s-nuclear-deal-with-india/5101030>, viewed 3 February 2015.

9 Mr Carlson, *Submission 1*, p. 12.

10 The private briefing and the final hearing took place on the same day, Monday 15 June 2015.

6.17 Dr Floyd summarised his obligations under the Act in the following terms:

> …the Act goes to the specificity of the reporting that I have to provide the parliament on an annual basis. The specificity is quite detailed: I have to go to the total quantities of Australian obligated nuclear material in each stage of the nuclear fuel cycle; I have to go to the intended end use of that material and, furthermore, I have to report any unreconciled differences in those quantities of nuclear material wherever they might arise. [11]

6.18 On 12 February 2015, the Director-General of ASNO advised the Committee that:

> The administrative arrangement is obviously under negotiation, but what we need to deliver is clear in the Safeguards Act. One of those aspects is my reporting requirements, which are clearly outlined in the Safeguards Act. So we are negotiating to be able to deliver an administrative arrangement that sits with the nuclear cooperation agreement that would meet those requirements. [12]

6.19 By 15 June 2015, he was able to advise:

> I am very confident that the mechanism we have developed will allow me to determine the disposition of Australian obligated nuclear material in India and fulfil my reporting obligations under the Safeguards Act. Because the content of such instruments is confidential to the parties, I will not be able to make the Australia-India administrative arrangement public. However, my obligation to report each year to the parliament on the disposition of Australian obligated nuclear material means that a key product of the administrative arrangement will, in fact, be public. [13]

6.20 Based on these statements, the Committee trusts that the tracking and accounting mechanism in the Administrative Arrangement will ensure that Australian nuclear material can be tracked and accounted for.

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11 Dr Robert Floyd, Director General, Australian Safeguards and Non-Proliferation Office (ASNO), Department of Foreign Affairs and Trade, *Committee Hansard*, Canberra, 15 June 2015, p. 3.

12 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 12 February 2015, p. 2.

13 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 15 June 2015, p. 3.

Mixing of safeguarded and unsafeguarded materials

6.21 According to Professor Lawrence Scheinman, under *the Agreement between the Government of India and the International Atomic Energy Agency for the Application of Safeguards to Civilian Nuclear Facilities* (the IAEA Agreement), safeguarded and unsafeguarded nuclear material can be used together and unsafeguarded nuclear material can be substituted one for the other causing safeguarded material to end up in a military program.[14]

6.22 John Carlson also makes this point:

> The IAEA agreement gives India a number of options for moving nuclear material between its safeguarded and its unsafeguarded programs.[15]

6.23 John Carlson argues that Australia's standard safeguards agreements, such as those with Russia and China, close off any such options. The proposed Agreement with India does not. As a consequence, according to Mr Carlson, Australian material could be used to produce unsafeguarded plutonium that ends up in India's nuclear weapon program.[16]

6.24 This is also the interpretation of Kalman Robertson, of the Strategic and Defence Studies Centre, School of Politics and International Relations at the Australian National University.

6.25 He argues that the proposed Agreement appears to hypothetically permit India to fission a mix of 75 per cent unsafeguarded nuclear material and 25 per cent Australian nuclear material in a reactor for a short period of time in order to produce irradiated fuel of weapons grade. The 75 per cent of the fuel that is unsafeguarded can then be taken to an unsafeguarded facility for reprocessing into weapons material.[17]

6.26 ASNO concedes that such a hypothetical situation could occur, but provides an extensive explanation as to how, in practice, the proposed Agreement will prevent this from happening.

6.27 Firstly, Dr Robert Floyd makes it clear that India's obligations prohibit Australian nuclear material from being used for military purposes at all times:

> … India's fundamental undertaking, which is set out in paragraph 1, Article I of their agreement with the International Atomic Energy Agency, what is called INFCIRC/754, states:

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14 Professor Lawrence Scheinman, *Submission 13*, p. 1.

15 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 2.

16 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 2.

17 Mr Kalman Robertson, *Submission 11*, p. 12.

> India undertakes that none of the items subject to this Agreement … shall be used for the manufacture of any nuclear weapon or to further any other military purpose …
>
> … this undertaking goes beyond a commitment not to divert safeguarded material. It also prohibits any use by India of safeguarded material, or a safeguarded facility, in a way which would assist its nuclear weapons program.
>
> … The peaceful use undertaking in paragraph 1 of Article VII of the proposed Australia-India NCA achieves a very similar result, and the culmination of that paragraph, combined with the definition of 'peaceful purpose' in Article I, excludes the use of Australian obligated material for any military purpose. [18]

6.28 In relation to the specific example given by Lawrence Scheinman, John Carlson and Kalman Robertson, Dr Floyd states:

> … as soon as it [Australian nuclear material] is mixed, the whole lot becomes safeguarded and so in one sense you can never have our material mixed with unsafeguarded material because as soon as such a scenario occurs, the whole thing is safeguarded. [19]

6.29 The Committee is satisfied that the mixing of Australian nuclear material with unsafeguarded material would be contrary to India's obligations both to Australia and the IAEA.

Reprocessing

6.30 Reprocessing of spent nuclear fuel is a process by which nuclear fuel that has already been used is refined to extract any remaining usable nuclear fuel. This is a highly regulated process because the products extracted from the spent fuel include materials essential to weapons manufacture, such as plutonium.

6.31 To highlight how sensitive reprocessing is, Crispin Rovere cites the example of the cooperation agreement between the United States and South Korea. Despite being close allies, and South Korea having a large and well organised nuclear power program, South Korea was not permitted to reprocess United States nuclear materials. [20]

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18 Dr Floyd, ASNO, *Committee Hansard*, 15 June 2015, p. 7.

19 Dr Floyd, ASNO, *Committee Hansard*, 15 June 2015, p. 8.

20 Mr Crispin Rovere, *Submission 2*, p. 9.

6.32 Reprocessing of Australian nuclear material has only been permitted in Australian nuclear cooperation agreements with Japan and the EU. In these cases, the reprocessing, use and storage of reprocessed material can only take place in Australian approved facilities. This is called programmatic consent.[21]

6.33 Programmatic consent is not possible with India because it does not yet have reprocessing facilities that Australia can approve. However:

> India has indicated that consent for reprocessing of Australian obligated nuclear material is very important to it. Although actual reprocessing of Australian obligated nuclear material would be more than a decade away, this process plays a significant role in India's plan for further development of its civil nuclear power, including recycling of nuclear fuel. India wants assurance that Australian obligated nuclear material will be able to be used in accordance with those plans.[22]

6.34 Consequently, Article VI of the proposed Agreement grants consent to the Indian Government to reprocess nuclear materials in facilities dedicated to reprocessing in accordance with the *Arrangements and Procedures Agreed between the Government of the United States of America and the Government of India pursuant to Article 6(iii) of their Agreement for Cooperation Concerning Peaceful Uses of Nuclear Energy*, done at Washington D.C. on 30 July 2010.

6.35 This reprocessing agreement permits India to reprocess nuclear materials of United States origin at two reprocessing facilities yet to be constructed.[23]

6.36 The change in approach from Australia's usual programmatic consent to consent based on an agreement between the United States and India is at the heart of concerns about reprocessing in the proposed Agreement. These concerns are expressed by, for example, John Carlson.[24]

6.37 From the Committee's point of view, the critical issue is whether the safeguards applying to the reprocessing plants and any resulting reprocessed Australian nuclear material under the proposed Agreement are as strong as they would be if programmatic consent was used.

6.38 John Carlson points out that the agreement between the United States and India applies safeguards only to the proposed reprocessing plants

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21 Mr Carlson, *Submission 1*, p. 20.

22 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 15 June 2015, p 2.

23 United States State Department, *Arrangements and Procedures Agreed between the Government of the United States of America and the Government of India pursuant to Article 6(iii) of their Agreement for Cooperation Concerning Peaceful Uses of Nuclear Energy*, done at Washington D.C. on 30 July 2010, <http://www.state.gov/p/sca/rls/139194.htm>, viewed on 5 June 2015.

24 Mr Carlson, *Submission 1*, p. 20.

themselves, and not to other facilities at which the reprocessed material may be used. It also applies accounting standards to United States nuclear materials only, so it is not clear that it will apply to Australian materials reprocessed at these plants.[25]

6.39 According to ASNO:

> … For India, the proposed Agreement invokes detailed best-practice conditions from the US-India agreement, designed to ensure that IAEA safeguards can be implemented in an effective and efficient matter. The advantage is that this represents greater prescription in terms of safeguards than Australia has sought for reprocessing when compared to other cases.[26]

6.40 Reprocessed Australian nuclear materials used in Indian nuclear facilities will, according to ASNO, continue to be covered by the peaceful use only undertaking in the proposed Agreement.[27]

6.41 This is not the same as the programmatic approach, which would list specific facilities at which the material could be used, but it does apply a de facto limitation on the sites at which reprocessed material can be used because reprocessed material will only be able to be used in IAEA safeguarded facilities.

6.42 On this basis, the Committee is satisfied that, while the proposed Agreement takes a new approach to reprocessing, it seeks to achieve the same safeguards standards as the previous programmatic approach.

Enrichment

6.43 Article VI of the proposed Agreement permits the enrichment of Australian nuclear material to a level of less than 20 per cent in the isotope 235 of uranium. Enrichment above this level can be undertaken with Australia's prior consent.[28] The purpose of this Article is to prevent the enrichment of Australian nuclear material to a concentration that could be used in nuclear weapons.

6.44 This Article has proven contentious because of the interpretation of the wording in the second sentence of Article VI (5), which states:

> Enrichment of twenty percent and above in the isotope of uranium 235 shall be undertaken with prior consent of the Supplier Party.

25 Mr Carlson, *Submission 1*, p. 21.

26 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 15 June 2015, p. 2.

27 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 15 June 2015, p. 2.

28 The proposed Agreement, Article VI.

6.45 Ronald Walker, former Australian Representative to the IAEA, argues that:

> According to those words, Australia does not claim and India does not acknowledge a right to withhold consent, to be satisfied as to the purpose of the enrichment and as to the applicable controls, and to withdraw the consent if we are dissatisfied. The text is open to the interpretation that Australia has given its consent in advance to high-level enrichment, unconditionally. Worse, on a strict reading, as a lawyer would, Australia's consent, given or not, has no legal or operational significance.[29]

6.46 This view is supported by Ernst Willheim, Visiting Fellow at the ANU College of Law, and previous head of the Australian Government Office of General Counsel. According to Mr Willheim, a comparison with another article in the proposed Agreement, Article IX, shows that Australian prior consent to enrichment to 20 per cent or more may not be required.[30]

6.47 Article IX of the Treaty deals with retransfers of nuclear materials. It provides, in part, that items subject to the Agreement shall not be transferred without the **prior written consent** of Australia (emphasis added). According to Dr Willheim, the language is clear and unambiguous.[31]

6.48 Dr Willheim argues that:

> … If the intention of Article VI were similar, that is, to require prior Australian consent to reprocessing, one would naturally have expected similar language. So there are two very different consent provisions in the same treaty document. The inclusion of such a clear and unambiguous requirement for prior consent in Article IX and the very different language in Article VI requires the obvious inference that the intention was different.[32]

6.49 According to ASNO, the second sentence of Article VI (5) should not be read without reference to the first sentence, which is clear that consent has only been given to enrich Australian nuclear material to less than 20 per cent in the isotope 235 of uranium.[33]

6.50 Read together, ASNO claims that the meaning of the article is unambiguous.[34]

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29 Mr Walker, *Committee Hansard*, Canberra, 9 February 2015, p. 9.

30 Mr Ernst Willheim, *Submission 23*, p. 2.

31 Mr Willheim, *Submission 23*, p. 2.

32 Mr Willheim, *Submission 23*, p. 2.

33 Australian Safeguards and Non-Proliferation Office (ASNO), *Submission 22*, p. 3.

34 ASNO, *Submission 22*, p. 3.

6.51 ASNO points out that this form of words is also used in the United States nuclear cooperation agreement with India, and the United States Government is equally satisfied as to the meaning of the article.[35]

6.52 Further, ASNO indicates that in discussions with Indian officials, it is clear that they understand that consent is required for enrichment of 20 per cent or more. [36]

6.53 The Committee is not in a position to make an informed decision as to which of the advice provided by Mr Willheim or the advice provided by ASNO is the more accurate. Accordingly, the Committee recommends that the Australian Government outline the legal advice it has received on this matter.

Recommendation 4

6.54 **The Committee recommends that the Australian Government outline the legal advice it has received regarding the consent to reprocessing provisions in Article VI of the proposed *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy*.**

The additional protocol

6.55 The NIA indicates that Australian nuclear material will be subject to the safeguards under the Additional Protocol to the *Agreement between the Government of India and the International Atomic Energy Agency for the Application of Safeguards to Civilian Nuclear Facilities* (the Additional Protocol).[37]

6.56 This statement has caused a degree of confusion, because the Additional Protocol applies only to nuclear exports from India, and does not apply to nuclear facilities in India. In other words, it may have no application to Australian nuclear material.[38]

35 ASNO, *Submission 22*, p. 3.

36 ASNO, *Submission 22*, p. 3.

37 National Interest Analysis, [2014] ATNIA 22, *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy*, [2014] ATNIF 26, hereafter referred to as the NIA, para 11.

38 Mr Carlson, *Submission 1.2*, p. 4; and Mr Robertson, *Submission 11*, p. 7.

6.57 At the public hearing on 15 June 2015, Dr Robert Floyd clarified precisely how the Additional Protocol applies to Australian nuclear material:

> The additional protocol has two key important areas that do apply to facilities that Australian material would be found in. One is the right for inspectors to obtain long-term, multi-entry visas, which adds to the IAEA's ability to carry out short-notice inspections; the second is new rights on the use of communications systems, including facilitating of remote monitoring of those nuclear facilities. That allows for technical measures to be put in place to strengthen safeguards at facilities where Australian obligated nuclear material could be found. [39]

6.58 In other words, the application of the Additional Protocol will have a peripheral advantage to Australia in that it will permit the IAEA to better perform its monitoring functions at safeguarded Indian nuclear facilities.

Enforcement and Conflict resolution

6.59 A number of participants have identified the lack of a conflict resolution provision in the proposed Agreement as a significant flaw. All other Australian nuclear cooperation agreements, with the exception of the agreement with the United States, contain conflict resolution provisions.[40]

6.60 ASNO points out that, while the proposed Agreement contains no specific conflict resolution provision, there are a number of mechanisms for dealing with a dispute. For example, mechanisms for dealing with disputes can be found in Articles XI and XII of the Agreement.[41]

6.61 Australia may also, ASNO argues, make use of customary international law as reflected in the Vienna Convention on the Law of Treaties. This provision has recently been used in relation to the suspension of supply of nuclear materials to Russia.[42]

6.62 Finally, Article XIV provides for the termination of the proposed Agreement at 12 months' notice, along with the potential to cease cooperation at an earlier date if this is deemed necessary.[43] As discussed in a previous Chapter, ASNO raised the possibility of invoking Article XIV in the event that India resumed nuclear testing.

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39 Dr Floyd, DFAT, *Committee Hansard*, Canberra, 15 June 2015, p. 2.

40 Mr Carlson, *Submission 1*, p. 23.

41 ASNO, *Submission 22*, p. 5.

42 ASNO, *Submission 22*, p. 5.

43 ASNO, *Submission 22*, p. 5.

6.63 Another matter raised by participants to the inquiry was the lack of a provision permitting Australia to demand the return of its nuclear materials. This is called a 'right of return' provision, and is common to most Australian nuclear cooperation agreements.

6.64 The legality of right of return provisions was discussed at some length in the Committee's Report on the *Agreement between the Government of Australia and the Government of the United Arab Emirates on Cooperation in the Peaceful Uses of Nuclear Energy*.[44]

6.65 John Carlson, one of a number of participants who expresses some concern over this issue,[45] advises that:

> All our other agreements provide that, if there is a violation, we have the right to take back what we have supplied. How that would work in practice is another story, of course. I do not think we would be keen to take back spent fuel.[46]

6.66 According to ASNO, energy security is at the heart of the reason a right of return is not included in the proposed Agreement. The Indian Government is very concerned not to expose the country to a situation in which its electricity supply could be threatened by an exporting nation requiring the return of fuel.[47]

6.67 India has only consented to a right of return in a single nuclear cooperation agreement – with the United States - and then only if the United States agreed to include substantial financial compensation provisions should the right of return be exercised.[48]

6.68 Taking account of these considerations as well as the practical challenges if Australia had to accept the return of nuclear material, ASNO is not concerned that a right of return provision is not part of the proposed agreement.[49]

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44 Parliament of Australia, Joint Standing Committee on Treaties (JSCOT), *Report 137*, tabled 18 March 2014.

45 See also for example Dr Jim Green, National Nuclear Campaigner, Friends of the Earth, *Committee Hansard*, Melbourne, 18 May 2015, p. 25.

46 Mr Carlson, *Committee Hansard*, Canberra, 9 February 2015, p. 6.

47 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 12 February 2015, p. 2.

48 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 12 February 2015, p. 2.

49 Dr Floyd, ASNO, *Committee Hansard*, Canberra, 12 February 2015, p. 2.

Conflict with the Treaty of Rarotonga

6.69 According to the Uniting Church of Australia Justice and International Commission, Synod of Victoria and Tasmania, the proposed Agreement places Australia in possible breach of the *South Pacific Nuclear Weapons Free Zone Treaty* (the Treaty of Rarotonga). Article 3 of that Treaty states in part:

> Each Party undertakes: …
>
> - (c) not to take any action to assist or encourage the manufacture or acquisition of any nuclear explosive device by any State.

6.70 Article 4 of that Treaty states:

> Each Party undertakes:
>
> - (a) not to provide source or special fissionable material, or equipment or material especially designed or prepared for the processing, use or production of special fissionable material for peaceful purposes to:
>   - ⇒ (i) any non-nuclear-weapon State unless subject to the safeguards required by Article III.1 of the NPT, or
>   - ⇒ (ii) any nuclear-weapon State unless subject to applicable safeguards agreements with the International Atomic Energy Agency (IAEA). Any such provision shall be in accordance with strict non-proliferation measures to provide assurance of exclusively peaceful non-explosive use;
> - (b) to support the continued effectiveness of the international non-proliferation system based on the NPT and the IAEA safeguards system.[50]

6.71 The International Campaign against Nuclear Weapons (Australia) obtained legal advice by Australian National University's Professor Don Rothwell. Professor Rothwell's advice:

> … was really very clear—that is, under the South Pacific nuclear weapon free zone treaty, which Australia drove and was a founding state party of, nuclear commerce is only to be countenanced subject to the provisions of article 3 of the NPT. Section 2 of that article stipulates that with non-nuclear-armed states, nuclear commerce is only to be conducted when all of those nuclear facilities in those countries, in fact all of those subject to their jurisdiction, even if they are not completely within their territory, should be bound by safeguards applied by the International Atomic Energy Agency—that is, a comprehensive safeguards agreement. India does not have a comprehensive

50 *South Pacific Nuclear Weapons Free Zone Treaty* (the Treaty of Rarotonga).

> safeguards agreement with the International Atomic Energy Agency, and therefore Professor Rothwell's advice was that such an agreement would be clearly in breach of Australia's obligations under a treaty that it drove, that really has helped to underpin the strengthening of the commitment to nuclear disarmament and nonproliferation in the region, of which we are part. I think that legal advice is an important matter to put before this committee.[51]

6.72 At the public hearing on 15 June 2015, the Committee asked Dr Robert Floyd in his capacity as the Director-General of ASNO if he had obtained external legal advice about the legality of the proposed Agreement, and if so, whether he was satisfied that the Agreement was consistent with Australia's other legal obligations.

6.73 Dr Floyd responded:

> I am satisfied that the advice we have received is that it is consistent with our legal obligations, and that advice comes from those who are expert in these matters.[52]

6.74 As discussed above in relation to reprocessing, the Committee is not in a position to make an informed judgement when experienced legal practitioners provide apparently contrary advice. The Committee believes it would be prudent for the Government to anticipate a possible challenge to the proposed Agreement on the grounds that Australia has breached the provisions of the Treaty of Rarotonga.

Conclusion

6.75 The bulk of the issues relating to specific provisions in the proposed Agreement have been resolved to the Committee's satisfaction.

6.76 In particular, the Committee is as satisfied as it can be that Australian nuclear material will be tracked and accounted for in sufficient detail to prevent its legal use in unsafeguarded nuclear facilities in India.

6.77 In relation to the lack of right of return provisions, India's reasons for wanting to retain nuclear materials are understandable. In addition, should the proposed Agreement be terminated, the safeguards applying to Australian nuclear materials are required to remain in place.

6.78 In relation to the issues arising from the consent provisions applying to refining Australian nuclear material and any conflict between the

51 Associate Professor Tilman Ruff, International Campaign to Abolish Nuclear Weapons (Australia), *Committee Hansard*, Melbourne, 18 May 2015, p. 14.

52 Dr Floyd, ASNO, *Committee Hansard*, 15 June 2015, p. 9.

proposed Agreement and the Treaty of Rarotonga, the Committee is not in a position to determine which of the two differing expert opinions in each is correct, and therefore the Committee can only advise the Australian Government that it may be prudent to expect a challenge to its view on these issues.

6.79 India's need for ongoing supplies of nuclear materials for energy security will, in the Committee's view, reinforce its commitment to adhere to the provisions of the proposed Agreement.

7

Concluding remarks

7.1 The evidence presented before the Committee as part of this inquiry depicts an international community of specialists attempting to preserve a highly successful international framework of non-proliferation in a newly developing multi polar world. The views expressed reflect the differing hopes and concerns of this community.

7.2 The Committee has attempted to weave a path through the complex cartography of issues presented by the *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* (the proposed Agreement). It has taken some time, and the Committee appreciates the cooperation and patience of the Australian Government and those who participated in the inquiry.

7.3 It would be fair to say that, in this debate, there are no small risks or benefits. Every issue the Committee has dealt with in this inquiry bears significant potential benefits and risks.

7.4 To begin with, the quantum of uranium involved could easily double the size of the uranium mining industry in Australia, bringing significant export revenue, and business and employment opportunities at a time when commodity prices for other mining exports are slowing the pace of growth in Australia's mining industry.

7.5 For India, the significance of the proposed Agreement is possibly even greater. As an emerging world power with a considerable shortfall of generating capacity, nuclear powered electricity generation will grow as one of a number of generating sources selected because of their low carbon emissions.

7.6 The question for the Committee is, then, given the benefits for Australia and India from the proposed Agreement; can the risks be tolerated and ameliorated?

7.7 The Nuclear Non-Proliferation Treaty (NPT) is performing well in limiting the proliferation of nuclear weapons. However, with India as an emerging world power the NPT faces a significant challenge. The problem lies in the arbitrary date that separates those parties to the NPT who are nuclear weapons states and those who are not. India is on the wrong side of that date.

7.8 Forty years of isolation from the non-proliferation community have not prevented India from developing and deploying nuclear weapons.

7.9 The Nuclear Suppliers' Group has attempted to find a way to bring India into the non-proliferation mainstream by permitting the sale of uranium if India adopts the standards expected of nuclear armed states under the NPT.

7.10 The bulk of signatories to the NPT appear to oppose this approach on the grounds that they have sacrificed the right to possess nuclear weapons in order to participate in the non-proliferation mainstream and benefit from access to nuclear generated electricity if they so wish. This is a reasonable argument.

7.11 The Committee believes that if signatories to the NPT are going to accept India back into the non-proliferation mainstream, the Indian Government is going to have to act expeditiously to prove its non-proliferation credentials as an emerging world power.

7.12 To this end, the Committee has recommended the Australian Government consider facilitating the negotiation of a nuclear arms limitation treaty in the subcontinent region.

7.13 For the Committee, the highest standard of safety in the use of Australian nuclear material is a central requirement for the export of that material. Should Australian nuclear material be sold to India, the Australian public will want to be assured that the nuclear material is being used safely.

7.14 Recent examinations by a number of reputable institutions indicate that safety standards are not as high as they should be, particularly in the areas of the independence of the nuclear regulator, and the quality and quantity of safety inspections.

7.15 Because of this, the Committee has recommended that Australian uranium not be sold to India until the Indian Government has established a nuclear regulator with statutory independence and safety inspections of Indian nuclear facilities that meet best practice standards.

7.16 In relation to the specific issues associated with the proposed Agreement itself, the bulk of these have been resolved to the Committee's satisfaction. In particular, the Committee is as assured as it can be that Australian nuclear material will be tracked and accounted for, and so will not be diverted into military applications.

7.17 On a couple of issues: the terminology used in the consent mechanism for the refinement of nuclear materials; and the question of whether the proposed Agreement breaches the Treaty of Rarotonga, the Committee is faced with opposing interpretations presented by very reputable sources.

7.18 As the Committee has noted previously, it does not have the expertise, or the power, to determine which of these views is correct. In line with the Committee's previous recommendation, the Committee recommends that the Australian Government outline the legal advice it has received in relation to the Treaty of Rarotonga.

Recommendation 5

7.19 **The Committee recommends that the Australian Government outline the legal advice it has received concerning whether the proposed *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* breaches Australia's obligations under the *South Pacific Nuclear Weapons Free Zone Treaty*.**

7.20 Overall, the Committee believes that, conditional on the recommendations relating to nuclear safety, the proposed Agreement represents a prudent and balanced approach to dealing with the nuclear material needs of an emerging and energy hungry world power.

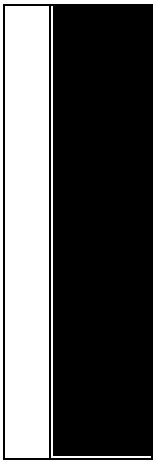
7.21 The Committee also believes that the proposed Agreement will make a measurable contribution to reducing greenhouse gas emissions and preventing damaging climate change into the future.

Recommendation 6

7.22 **Subject to the above recommendations, the Committee supports the *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy* and recommends that binding treaty action be taken.**

Mr Wyatt Roy MP

Chair



Additional Comments—The Hon Melissa Parke MP and Senator Sue Lines.

As members of the Joint Standing Committee on Treaties (JSCOT), we endorse the cautious approach adopted by the majority of the committee in its report on the *Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy (New Delhi, 5 September 2014).* However we consider that the Committee's major concerns, including the full separation of India's civil and military nuclear facilities and the establishment of an independent nuclear regulatory authority, are best addressed prior to ratification. The majority Committee view that these matters be addressed after ratification but prior to sale is positive in that it acknowledges the importance of this action before any future transfer of Australian uranium but this position is at risk of being overtaken by more narrow political and commercial priorities. The current Agreement is deficient and requires further attention to be strengthened to a standard consistent with both Australia's other nuclear safeguards mechanisms and community expectations. With regard to other matters about which the majority Committee has expressed its satisfaction, such as the requirement for India to track and account for Australian nuclear material, we are not prepared to simply accept ASNO's assurances; we would actually need to see the confidential administrative arrangement that it is claimed provides for such tracking and accounting.

These Additional Comments thus reflect the deep unease we feel at the Agreement's departure from the strong safeguards arrangements Australia has with many other countries.

Summary Overview

Australia's uranium export policy dates back to the 1970s. The principal objective of this policy is to ensure that Australian uranium and nuclear material derived from Australian uranium (known as Australian Obligated Nuclear Material –

AONM) is not used for nuclear weapons or any other military purpose and cannot contribute to any military purpose. Until the proposed nuclear cooperation agreement with India ("the NCA"), this policy has been applied by successive governments on a bipartisan basis. Australia's nuclear supply conditions have been accepted by 41 countries, and are given effect through 23 nuclear cooperation agreements (the difference in these numbers is due mainly to the agreement with the European Union which covers 28 countries).

Nuclear cooperation with India raises a number of major issues, including:

1. India is not a party to the Nuclear Non-Proliferation Treaty (NPT). Australia's policy has been to require NPT membership for nuclear supply to non-nuclear-weapon states. Under the terms of the NPT India does not qualify as a "nuclear-weapon state", and therefore is classed legally as a "non-nuclear-weapon state". India's non-NPT status is also an issue under the South Pacific Nuclear Weapons Free Zone Treaty, which in the case of non-nuclear-weapon states limits nuclear supply to NPT parties. Since India has nuclear weapons, to regard it as a non-nuclear-weapon state is a legal fiction. Serious questions about the legality of the proposed sales action were raised during the Committee's investigations and we are concerned that the proposed India NCA is in conflict with Australia's obligations under the SPNWFZ Treaty.
2. India is one of only three countries (the others are Pakistan and North Korea) which are still producing nuclear material for nuclear weapons. The NPT nuclear-weapon states ceased production of nuclear material for nuclear weapons many years ago.
3. Directly relevant to the preceding point, the Committee received expert testimony that India has not fully separated its military and civilian nuclear programs, and has not placed all civilian facilities under IAEA (International Atomic Energy Agency) safeguards. According to such eminent experts as Mr John Carlson AM and Mr Ronald Walker, some civilian facilities outside India's safeguarded program appear to be linked to its military program.
4. Also directly relevant to points 2) and 3), the Committee heard that India's safeguards agreement with the IAEA gives India the right to use safeguarded nuclear material in facilities that are outside the safeguarded program (and also to use unsafeguarded material in safeguarded facilities). This flexibility to use safeguarded material outside the safeguarded program is not available to NPT nuclear-weapon states; it is peculiar to India.

5. It cannot be overlooked that in the past India has disregarded peaceful use agreements. The plutonium for its first nuclear test, in 1974, came from the misuse of a reactor supplied by Canada (and using US-supplied heavy water) under peaceful use agreements, and India continued to use this reactor for its nuclear weapon program until the reactor was closed in 2010.
6. The long standing nuclear rivalry between India and Pakistan continues to directly threaten regional security and peace. A new report by the US based Carnegie Endowment for International Peace and the Stimson Centre concludes that Pakistan is currently rapidly expanding its nuclear capabilities because of its fear of India. In such a volatile context it is imperative that the highest levels of scrutiny, assurance and transparency apply to any Australian fissile materials.

Both Labor and the Coalition are committed to strengthening Australia's bilateral relationship with India. In 2012 it was the Labor Gillard government that commenced the negotiation of a bilateral nuclear cooperation agreement (NCA) with India. In this context, it is recognised that access to low carbon energy resources can make an important contribution to India's economic and social development. However, having regard to the circumstances outlined above, we consider it essential that any nuclear agreement with India should be at least as rigorous as all the agreements Australia has concluded with other countries. There is no justification for Australia to require less of India than of all our other agreement partners. The Australian Labor Party Platform states:

> In relation to India, an important strategic partner for Australia, commitments and responsible actions in support of nuclear non-proliferation, consistent with international guidelines on nuclear supply, will provide an acceptable basis for peaceful nuclear cooperation, including the export of uranium, subject to the application of strong safeguards. (*underlining added*)

The proposed NCA does not provide "strong safeguards" and undermines a bi-partisan safeguards policy that has operated successfully for almost forty years. We are particularly concerned that the NCA in its present form fails to provide adequate assurance against the possible use of AONM to contribute to a military purpose.

Specific areas of concern

There were 23 submissions sent to the committee, or a total of 39 including supplementary submissions. The great majority of submissions were critical of the proposed NCA, in particular about safeguards and legal aspects. Especially

noteworthy were submissions critical of the details of the NCA from former senior safeguards, diplomatic and legal officials with unparalleled expertise in the issues involved.

1 The NCA does not include right of return provisions if AONM is diverted for military purposes, or if the NCA is breached in some other way

In every other NCA to which Australia is a party, successive governments have insisted on being able to demand the return of AONM that has been supplied under the agreement, should the recipient be found in breach of safeguards. This critical provision ensures that those who illegally seek to proliferate nuclear weapons with the benefit of Australian-supplied material are not able to bank the gains already received once the illegal activity is discovered. This treaty provision helps persuade recipient countries not to use AONM material to rush for nuclear weapons, since the benefits obtained through nuclear cooperation with Australia would be at risk.

This NCA provides no right of return of supplied material in event of a breach of the NCA. India has given a right of return to the US under the US-India agreement, however the Abbott government has failed to obtain this standard condition for Australia.

Under this NCA, the testing of nuclear weapons by India does not violate the NCA. Accordingly, it remains unclear what the Australian Government's response would be to a resumption by India of nuclear weapons testing, and what legal basis Australia might have for suspending uranium supply in that circumstance.

We feel that this could have grave consequences. Under this NCA India could stockpile substantial quantities of AONM. The failure to obtain a right of return means that if the NCA is suspended by Australia (following, for example, a resumption by India of nuclear weapons testing) that material would remain available for India's use.

The committee received testimony from the Australian Safeguards and Non-Proliferation Office (ASNO). ASNO did not provide any technical reason as to why this NCA does not include right of return provisions.

We are not suggesting that India has any intention to use AONM in violation of the NCA, and we support in-principle the supply of uranium to India in accordance with our policy platform. But a failure to obtain from India this completely standard provision means that a major disincentive to conduct further nuclear testing is lost as a direct result of the Government's failure to insist on standard NCA provisions.

Recommendation:

1. **That the NCA not be ratified in its present form, but be amended, either directly or through an exchange of letters, to expressly state that Australia may require the return of AONM supplied under the NCA should India be found in-breach of the NCA or its broader non-proliferation undertakings with respect to India's Nuclear Suppliers Group exemption.**

2 The NCA does not limit AONM to facilities under permanent IAEA safeguards

India possesses a growing nuclear arsenal. India is also producing fissile material for nuclear weapons. To that end, some of India's nuclear reactors are designated for civilian power production under safeguards, while others are for military purposes to produce bombs, and some may serve both purposes. The committee heard that India has a "separation plan" under which it has designated 14 out of its current 22 power reactors, and some associated facilities, as "civilian" and placed them under permanent IAEA safeguards. For the future, India reserves the right to decide which additional facilities, if any, it will place under safeguards. However, major parts of India's civilian program – various power reactors, fast breeder reactors, enrichment facilities and reprocessing facilities – have not been designated as civilian. These remain outside IAEA safeguards and evidently will remain so in the future. Thus India operates a number of unsafeguarded facilities, some of which are civilian, some military, and some that appear to be both.

According to eminent experts, this incomplete separation of India's civilian and military programs is problematic because India's safeguards agreement with the IAEA ("the IAEA agreement") allows India to move nuclear material that is subject to safeguards requirements (such as AONM) between its safeguarded and unsafeguarded programs, and vice versa. The IAEA agreement sets out two different safeguards regimes within India:

1. Permanent safeguards for facilities that have been designated as "civilian" under India's separation plan. These facilities are listed in the Annex to the IAEA agreement.
2. All other nuclear facilities in India are normally outside IAEA safeguards. Such a facility will become subject to safeguards on a temporary basis if India decides to use safeguarded material in that facility. The facility will be subject to safeguards while nuclear material subject to safeguards requirements remains there.
3. In the case of facilities safeguarded on a temporary basis, the IAEA agreement has special provisions, for example allowing India to use safeguarded and unsafeguarded material together, and in particular circumstances to remove from safeguards nuclear material that has

been produced using safeguarded material. For instance, India can use safeguarded uranium to produce plutonium which it can then remove from safeguards.

The NCA provides that IAEA safeguards apply to AONM in accordance with the IAEA agreement. As just discussed, the IAEA agreement allows India to use safeguarded material in facilities that are outside India's safeguarded program. It follows that AONM could be so used to contribute to the production of unsafeguarded nuclear material – the NCA does not exclude this.

ASNO noted that both the IAEA agreement and the NCA proscribe use of safeguarded material to further any military purpose. However ASNO was unable to explain how, once India exercises its right to remove material from safeguards, either the IAEA or Australia would be in a position to verify whether that material ends up being used for a military purpose.

ASNO's evidence on this point was inconsistent. ASNO's submission of 2 March 2015 stated that AONM cannot be used in India's unsafeguarded reactors. At the Committee's hearing on 15 June 2015 ASNO was asked to substantiate this statement but did not do so. When asked whether Australia specifically asked India for AONM to be used only in facilities that are part of India's safeguarded program, ASNO said only that "AONM will only ever be used in facilities that are safeguarded."

This response is ambiguous, and avoids addressing the concerns raised by experts such as Mr Carlson. ASNO's use of the term "safeguarded" in this way confuses the issue by failing to distinguish between (a) facilities that are subject to permanent safeguards because they are designated as "civilian", and (b) facilities that are only temporarily safeguarded because India has transferred safeguarded material to them

Accordingly, we conclude that in its present form the NCA fails to ensure that AONM cannot be used to further any military purpose.

This issue should be rectified by expressly providing that AONM can be used only in facilities that are under permanent IAEA safeguards, namely, facilities that are listed in the Annex to the IAEA agreement. If India's intention is to use AONM only in facilities that are under permanent IAEA safeguards, it should have no objection to confirming this. On the other hand, if India's intention is to be able to use AONM in facilities that are not under permanent safeguards, we consider that the NCA is fatally flawed and should not proceed.

If the NCA proceeds without being amended to limit AONM to permanently safeguarded facilities, we consider that supply of AONM for India should be approved only for uranium that is enriched and fabricated into fuel assemblies in the United States and is transferred to India under the US-India nuclear cooperation agreement. The US, by supplying India only with fuel assemblies for specific reactors, should be able to ensure that US-obligated nuclear material (which would include AONM supplied to India after enrichment and fabrication

in the US) is limited to facilities that are permanently safeguarded. Australian uranium should not be supplied directly to India.

Recommendations:

2. **That the NCA not be ratified in its present form, but be amended, either directly or through an exchange of letters, to expressly state that AONM can be used only in facilities that are under permanent IAEA safeguards, that is, facilities that are listed in the Annex to the IAEA agreement.**
3. **If the NCA is not amended in accordance with Recommendation 1, that supply of AONM for India be approved only for uranium that is enriched and fabricated into fuel assemblies in the United States and transferred to India under the US-India nuclear cooperation agreement.**

3 The NCA's consent provisions for reprocessing and high enrichment are ambiguous

Retention of consent rights over reprocessing and high enrichment are essential elements in Australia's nuclear export policy. The NCA's provisions on consent rights, in their present form, are at best ambiguous. Mr Ernst Willheim, formerly one of the Commonwealth's most senior law officers, made a submission to the committee in which he stated that as currently drafted these provisions are legally unacceptable.

In evidence to the committee, officials did not specifically address Mr Willheim's submission, saying only that there is no difference between Australia and India about the meaning of the provisions. In view of Mr Willheim's legal eminence, we consider his opinion should be taken very seriously. The committee might reasonably have expected officials to refer Mr Willheim's opinion to senior legal advisers, and to confirm, or otherwise, to the committee that after specifically considering Mr Willheim's opinion the Commonwealth's legal view remains that the drafting of the NCA is satisfactory.

Recommendation:

4. **That the NCA not be ratified in its present form without addressing concerns about the ambiguity of the consent provisions. Preferably this would be through amending the text, but at the least India should be asked to join in a clarifying statement to put beyond doubt that the two parties do share a common understanding of the meaning of the text.**

4 The NCA does not give Australia programmatic consent rights for reprocessing

Nuclear weapons require Uranium–235 or Plutonium–239. To produce these isotopes in the necessary purity for a nuclear bomb a would-be proliferator must either 'enrich' natural uranium by separating out the fissile isotope Uranium–235 from the Uranium–238 that is predominant in natural uranium, or breed plutonium by adding neutrons to Uranium-238 through irradiation of fuel in a reactor and then chemically separating the fissile Plutonium–239 from the spent fuel. The separation of plutonium from spent fuel is known as 'reprocessing'. Reprocessing enables the recycling of plutonium for use in another reactor but it can also serve as a pathway to a bomb. Obviously, reprocessing is a highly sensitive stage of the nuclear fuel cycle owing to the risk of diverting plutonium for nuclear weapons.

An essential aspect of Australian policy on reprocessing is that hitherto consent has been given only on a "programmatic" basis. This means that reprocessing and use of plutonium can take place only under a fuel cycle program agreed by both parties – Australian approval is required for the specific facilities using, handling or storing plutonium, and the purposes involved. To date Australia has given consent to reprocess only to Japan and the European Union (the latter covering reprocessing facilities in UK and France), and only for a mutually determined program.

The NCA however gives reprocessing consent without Australia having any say about the facilities that will use the plutonium. Effectively the NCA outsources Australia's consent to the US – India can reprocess AONM and use the recovered plutonium provided this is in accordance with the US-India reprocessing arrangements. The US does not have an equivalent to programmatic consent – so in this NCA Australia relinquishes any say in how India can use Australian-obligated plutonium; the only requirement is that the plutonium must be under IAEA safeguards (which in itself is not sufficient, given the flexibility available to India under the IAEA agreement, as discussed above).

To be consistent with established Australian policy, the consent provisions in the NCA should provide for programmatic consent.

Recommendation:

5. **That the NCA be amended, directly or through an exchange of letters, to provide for Australian-obligated plutonium to be used only in accordance with a fuel cycle program mutually determined by India and Australia.**

5 It appears India is not prepared to undertake accounting for and tracking of AONM in accordance with international practice

Accounting for and tracking of AONM are fundamental requirements of Australian policy and legislation (*Nuclear Non-Proliferation (Safeguards) Act 1987*). The NCA cannot be implemented if AONM cannot be identified and quantified. The NCA requires each party to establish an accounting system for nuclear material subject to the agreement. Details are to be in an administrative arrangement concluded by ASNO and its Indian counterpart. The administrative arrangement is confidential, so the text is not available to the committee or the public.

Evidence to the committee, not disputed by officials, suggested that Indian officials have had difficulties in agreeing to provide accounting and tracking information for AONM. The committee was informed that Indian officials had similarly refused to provide accounting and tracking information to the US – as a consequence, the US-India nuclear cooperation agreement, which was concluded in 2007, has still not become operational. The committee was further informed that earlier in 2015 Indian and US officials had finally reached a pragmatic solution.

Critically, the US would provide nuclear material in the form of fuel assemblies for US-supplied reactors – the material would stay in a self-contained US fuel cycle within the overall Indian fuel cycle. India would provide detailed operational information on the reactors to enable US officials to calculate plutonium production (which would be subject to the US-India agreement). Australia does not produce fuel assemblies, so cannot export AONM to India in that form, and the operational information that India chooses to provide to Australia has not been publicly disclosed.

The committee was informed in evidence that the established international practice, applied by every country that receives nuclear material under bilateral agreements except India, is to add a bilateral accounting function to the nuclear accounting system that the country operates under its IAEA safeguards agreement. Individual batches of nuclear material are linked to the relevant bilateral agreement through inclusion of a country code on IAEA accounting forms. The committee was informed that with modern nuclear accounting software it is very straightforward to track the batches of material that are subject to each agreement.

The committee was further informed that the attitude of Indian officials towards accounting and tracking may be due in part to India currently having only a simplified form of safeguards accounting, based on its old IAEA agreement. It is understood the IAEA is currently working with India to introduce a modern accounting system, to ensure that the IAEA can identify material required by bilateral agreements to be safeguarded. The committee was informed that the new accounting system could be used to identify the material that is subject to each

particular agreement. It is to be hoped that as Indian officials gain proficiency with the new system they will reconsider their opposition to tracking bilaterally obligated material.

Meanwhile, it remains to be seen whether the administrative arrangement will meet Australian requirements. Since the administrative arrangement is confidential it is difficult for the Parliament and the public to have confidence in the outcome, although we note the assurance of Dr Robert Floyd in a committee hearing on 15 June 2015 that he is satisfied he will be able to comply with his reporting requirements as per the *Safeguards Act*.

We do not consider it satisfactory that a matter of such importance to Australia's safeguards policy is contained solely in an administrative arrangement that neither the public nor the committee is allowed to see.

Evidence to the committee was that the pragmatic approach reached between the US and India is workable because of the limited scope of the nuclear material involved – fuel assemblies for US-supplied reactors are readily identifiable and tracked. It is difficult to see how the same approach could work if Australian uranium was supplied directly to India as bulk material.

Recommendations:

6. **That AONM not be supplied directly to India until Indian officials are following established international practice with regard to accounting for and tracking AONM.**
7. **Meanwhile, until Indian officials are following established international practice with regard to accounting for and tracking AONM, that supply of AONM for India be approved only for uranium that is enriched and fabricated into fuel assemblies in the US in accordance with Recommendation 2.**
8. **That JSCOT Committee members be provided with access to the administrative arrangements in order to satisfy the legitimate public interest concerns around the adequacy of the accounting and monitoring mechanisms prior to any Treaty ratification.**

6 The NCA does not give Australia the right to the IAEA's safeguards findings with respect to AONM

A standard provision in Australia's other nuclear cooperation agreements is for Australia to have access to the IAEA's safeguards conclusions with respect to material subject to the particular agreement. This NCA has no such provision. The committee heard that in the absence of such a provision, the IAEA is required to treat all country-specific safeguards information as confidential to India. Australia has no right to IAEA reports relating to AONM in India, nor even to ascertain whether India is meeting IAEA accounting requirements.

India's agreements with the US and Canada do provide access to IAEA reports on the status of their material. It is not clear why this has been omitted from this NCA.

Recommendation:

9. **That the NCA be amended, directly or through an exchange of letters, to give Australia the right to request the IAEA's safeguards findings or conclusions for India as they relate to AONM.**

7 This NCA undermines nuclear arms control and weakens Australia's non-proliferation credentials.

India has not signed the Comprehensive Nuclear-Test-Ban Treaty (CTBT). India maintains a unilateral moratorium against nuclear testing, but is free to change this position at any time. By contrast, China and the United States have signed the CTBT, and pending ratification are legally obligated not to act inconsistently with the Treaty; that is, not to test. India has no such obligation. India's refusal to sign the CTBT makes it unique among Australia's current nuclear cooperation partners, and this must be interpreted as an intention by India to maintain the option to recommence nuclear weapons testing in the future.

The committee heard that of these three nations (China, the United States and India), India has the strongest incentive to abrogate its moratorium and resume nuclear testing. This is because India has not successfully detonated a thermonuclear (hydrogen) bomb, and because of the ongoing and intensifying strategic competition in the Indo-Pacific region. Accordingly, concerns remain within India as to the reliability of its strategic deterrent relative to potential rivals. Without further nuclear testing by India, some feel these security concerns will not be resolved.

Australia's long-standing policy has been that since nuclear material can be used to create weapons of indiscriminate horror, the export of such material can be justified only where doing so helps to restrict the spread of such weapons. This NCA remains completely silent on India's future nuclear restraint or willingness to join the CTBT. There is no evidence that India intends to curtail or restrict the expansion of its nuclear weapons program in any way.

One of the strongest arguments in favour of concluding a nuclear cooperation agreement with India is that it brings India 'into the tent' with regard to international nuclear non-proliferation rules and norms. Far from achieving this outcome, this NCA entrenches India's nuclear deviance and privileges it ahead of Australia's other nuclear cooperation partners, thereby undermining the non-proliferation regime as a whole. We strongly believe that an undertaking by India to act in accordance with accepted non-proliferation norms comparable to other nuclear-armed states is an essential criterion for Australian nuclear supply.

Recommendation:

10. That prior to effect being given to the NCA, clarification is received from India as to its willingness to comply with non-proliferation norms and the exercising of nuclear restraint. A positive example would be for India to sign the Comprehensive Nuclear-Test-Ban Treaty, with confirmation it will ratify soon after the United States and/or China. This does not place restrictions on India's nuclear weapons program unilaterally, while still providing assurance to Australia and the world that India will respond reciprocally to steps taken by other nuclear-armed states.

The NCA contains other problem areas.

These include:

1. While the NCA states that AONM is to be subject to India's safeguards additional protocol with the IAEA, in fact India's additional protocol does not apply to any nuclear material in India. The IAEA's additional protocol was introduced to strengthen safeguards. Australia's policy makes the conclusion of an additional protocol a condition for uranium supply. However, according to experts, India has concluded a very limited additional protocol – by far the most restrictive of any country. This is an additional protocol in name but does not meet the intent of Australia's policy.
2. The NCA's fallback safeguards provisions fall well short of Australia's other agreements. Australia's standard condition is that, if for any reason IAEA safeguards cease to apply, the parties are to establish safeguards arrangements that conform to IAEA safeguards principles and procedures and provide equivalent assurance. This NCA requires only that the parties consult and agree on "appropriate verification measures", a vague term open to differing interpretations.
3. The NCA has no mandatory dispute settlement provision. Australia's standard condition is for disputes to be settled by negotiation, but with an arbitration process in case negotiations fail. This NCA provides only for negotiation. This leaves Australia potentially in a weak position, especially as the shortcomings in the NCA, together with the problem areas in India's IAEA agreement, create ample possibilities for dispute.

Conclusion

As members of the Joint Standing Committee on Treaties (JSCOT), we cannot support the Agreement between the Government of Australia and the Government of India on Cooperation in the Peaceful Uses of Nuclear Energy (New Delhi, 5 September 2014) in its present form.

We view the current NCA as a flawed instrument that fails to either provide industry certainty or advance non-proliferation.

We believe renegotiation is required to resolve the issues we have raised in these Additional Comments - issues that have all been identified as unresolved concerns by the majority Committee. This strengthening could be realised either through amending the text or through an exchange of letters clarifying the text and the shared understanding and intent of the Parties.

These are all serious issues that if not resolved could have adverse consequences for Australia's ability to ensure that Australian Obligated Nuclear Material cannot contribute to any military purpose. If not resolved there could be adverse consequences for public confidence in the NCA and for the preparedness of future governments to approve supply of nuclear material under the NCA. There is also the potential for damage to Australia's international reputation and credibility as a proponent of nuclear non-proliferation and a strong upholder of nuclear safeguards.

The Hon Melissa Parke MP

Senator Sue Lines

Additional Comments—Australian Greens.

The Australian Greens acknowledge the work and analysis in the Committee report and support the Committee's view that uranium not be sold to India at this time.

However, despite this prudent finding, the Australian Greens believe the Committee report fails to adequately address other risks and deficiencies in the proposed Agreement. These include:

- the Agreement is inconsistent with Australia's treaty obligations and undermines international law and established standards;
- the Agreement undermines global nuclear non-proliferation efforts and destabilises the international non-proliferation architecture; and
- the Agreement erodes the independence and effectiveness of the Australian Safeguards and Non-Proliferation Office (ASNO).

The Report acknowledges some of these defects but does not require these issues to be resolved before the Agreement is ratified. The magnitude of these issues is underscored by evidence that the Committee received from former top-ranking officials in the Australian and international nuclear sector warning against the Agreement.

Nevertheless, the Committee report is in no way a green-light for the sale of yellowcake to India. The Committee report clearly recommends that no sales to India be permitted until a set of detailed preconditions are met. The committee report states that:

> Australian uranium not be sold to India until the Indian Government has established a nuclear regulator with statutory independence and safety inspections of Indian nuclear facilities that meet best practice standards.

Irrespective, the Agreement is fundamentally inconsistent with both domestic and international obligations and puts short term political expedience above global security. As such, the Australian Greens cannot support this Agreement and urge others to do likewise.

Recommendation 1:

The Australia-India Nuclear Energy Cooperation Agreement not proceed.

The benefits for Australia and India

The commercial interests of a small and marginal industry sector must not be prioritised over global security concerns and Australia's international reputation. The Australian Greens dispute the Committee's acceptance of industry-sourced data on the value and importance of Australia's uranium sector. The sector remains a small employer and shrinking contributor to the economy.

The Australian Greens reject the false dichotomy that India must choose between nuclear and coal to meet future energy requirements; and instead note India's planned $200 billion investment in renewable energy. The Australian Greens strongly believe that India's energy future should be renewable not radioactive, and that Australia is well placed to assist in this respect.

The Agreement

The Agreement is inconsistent with Section 51(2) and 70(1) of the *Nuclear Non-Proliferation (Safeguards) Act 1987*; and Article IV of the *South Pacific Nuclear-Free Zone Treaty* (Treaty of Rarotonga) which Australia is legally obliged to uphold under Article XVIII of the Vienna Convention on the Law of Treaties.

The Committee has concluded that it is not in a position to make an "informed judgement" on such issues; but anticipates a challenge to the proposed agreement "on the grounds that Australia has breached the provisions of the Treaty of Rarotonga." This uncertainty alone should be enough to defer ratification of the Agreement.

Further concerns about the legality of the Agreement were highlighted in a number of submissions to the inquiry, particularly those by the former Director General of ASNO John Carlson; and the former Chair of the International Atomic Energy Agency (IAEA) Board of Governors, Ron Walker. The gravity of the legal deficiencies and subsequent proliferation risk is clearly articulated in comments made by Mr Carlson:

> It is understood Indian officials say they will not account for AONM [Australian obligated nuclear material], they will not do more than maintain IAEA accounts, because they say tracking AONM is expensive, complicated and unnecessary:
>
> I. the first objections are not true — AONM can be tracked simply by adding a two-or three-letter code to IAEA accounting forms,

this is the standard practice in all Australian partner countries (e.g. the code for Australia is "AU" or "AUS". The entries for AONM are readily aggregated by the accounting software in use today;

II. as to whether tracking is necessary this is not a matter for debate, it is a legal requirement — Article III.5 requires that it be done.

Essentially, Indian officials seem to be saying, before the agreement even enters into force that India has no intention of complying with Article III.5. If Australian officials, in the negotiation of the administrative arrangement, accept India's refusal to track AONM, they will be acquiescing in the contravention of the agreement."

ASNO is responsible for implementing Australian safeguards agreements and ensuring they are consistent with statutory obligations. As noted, this Agreement is not consistent with the existing Safeguards Act. This puts into question ASNO's independence and ability to function within the law. This Agreement allows India to operate outside the law and reduces the legitimacy of Australian agencies wishing to enforce the law.

Recommendation 2:

The Australian Government should make public in full its legal advice on the compliance of the Agreement with obligations under the Treaty of Rarotonga.

Nuclear non-proliferation

The Committee report has clearly identified nuclear weapons proliferation risks with India and the role Australia could play in negotiating a nuclear arms limitations treaty; promoting the Comprehensive Nuclear-Test-Ban Treaty (CTBT); and advancing a fissile material cut-off treaty. The Committee also outlines the need for an independent regulator in India and the need for assurance from the IAEA that site inspections will be best practice.

The Committee rightly concludes that "nuclear cooperation with India is probably the biggest issue in nuclear non-proliferation for some decades"; and "that nuclear cooperation with India is opposed by the bulk of signatories to the NPT [Nuclear Non-Proliferation Treaty] and may destabilise the international non-proliferation architecture."

India continues to expand its nuclear weapons program; is not a signatory to the NPT; and refuses to sign the CTBT. This indicates a complete disregard for Australian safeguards and international treaties.

As it stands, the Agreement tacitly endorses this behaviour. If Australia were to ratify the Agreement in its current form it would set an extremely dangerous precedent; would send the wrong message to purchasers of uranium; and would be out-of-step with international opinion.

The global risk of nuclear weapons production by India was identified in a resolution passed by the United Nations Security Council in 1998, which "encourages all States to prevent the export of equipment, materials or technology that could in any way assist programs in India or Pakistan for nuclear weapons".

Again, Mr Carlson provides a succinct description of the link between Australian uranium sales and the threat of nuclear weapons production:

> The nuclear material under this agreement will be usable for nuclear purposes for hundreds, if not thousands, of years. The material can undergo a number of recycling operations, producing further plutonium each time. Within the first decade or two there could be tonnes of plutonium derived from Australian uranium that would be well beyond any information available to Australia. The same situation applies to the uranium recovered from reprocessing, most of which could be recycled many times. Without a proper accounting system, once material loses its initial identity, there is no way of knowing where that material goes, or even quantifying it. There is no substitute or "equivalent" for accounting and tracking.

Mr Walker wrote to the Committee in May 2015 warning that that the Agreement "has a number of loopholes which mean that under the terms of the NCA India could use our uranium in the production of material that could end up in bombs."

ASNO itself has conceded that "such a hypothetical situation could occur." This situation is worsened because the checks and balances in relation to enrichment and reprocessing are deficient.

India's nuclear weapons ambitions are not only a collection of external observations and speculation. K. Subrahmanyam, former head of the National Security Advisory Board in India, said in 2005:

> Given India's uranium ore crunch and the need to build up our nuclear deterrent arsenal as fast as possible, it is to India's advantage to categorise as many power reactors as possible as civilian ones to be re-fuelled by imported uranium and conserve our native uranium fuel for weapons-grade plutonium production'. Clearly, Australian uranium would boost India's nuclear weapons capacity.

India's nuclear weapons ambitions are exacerbated not only by the extended conflict with Pakistan, but also because of strained relations with China which Indian officials consider as their "primary adversary", as noted by Mr Carlson.

Approving the Agreement would indicate that Australia does not take international treaties seriously, or our own safeguards, laws and regulatory bodies; and that Australian is willing to put relations with one country above nuclear non-proliferation. The NPT has already been systematically weakened by other agreements that are stronger than this Agreement. In its current form, this Agreement would further erode the effectiveness of nuclear non-proliferation efforts to the detriment of global security.

Nuclear safety in India

Selling uranium to India not only fuels the risk of nuclear weapons proliferation but also fuels an industry described by independent Indian analysts as substandard. The Australian Greens share the Committee's view that "the Australian Government cannot overlook such clear warnings about the quality of India's nuclear regulatory framework."

Australian uranium was sold to Tokyo Electric Power Company (TEPCO) and fuelled the continuing Fukushima Dai-ichi nuclear crisis. The fact that this happened in what the Committee describes as the "apparently robust environment" of Japan bodes poorly for the far less regulated Indian sector.

In 2012 the Indian Auditor General released a report warning against a disaster at an Indian reactor. The report identified that more than 60% of inspections of operating or existing nuclear reactors are up to five months late or do not occur at all. The report said India's Atomic Energy Regulatory Board is ineffective, mired in bureaucracy and negligent in monitoring safety. There have been numerous reports of workers' exposure to radiation through leaks and contaminated water. Other reports include incidents of uranium being stolen and unaccounted for.

Senator Peter Whish-Wilson

A

Appendix A–Submissions

Treaty tabled on 28 October 2014

1 Mr John Carlson
1.1 Mr John Carlson
1.2 Mr John Carlson
1.3 Mr John Carlson
1.4 Mr John Carlson
1.5 Mr John Carlson
2 Mr Crispin Rovere
2.1 Mr Crispin Rovere
3 Ms Michele Madigan
4 Mr Roma J O'Callaghan
5 Australian Conservation Foundation
6 Mr Ronald Walker
6.1 Mr Ronald Walker
6.2 Mr Ronald Walker
6.3 Mr Ronald Walker
6.4 Mr Ronald Walker
6.5 Mr Ronald Walker
6.6 Mr Ronald Walker
7 M V Ramana
8 Justice & International Mission, Uniting Church in Australia
9 Minerals Council of Australia

10 International Campaign to Abolish Nuclear Weapons (Australia)
10.1 International Campaign to Abolish Nuclear Weapons (Australia)
11 Kalman A Robertson
12 Gundjeihmi Aboriginal Corporation
13 Professor Lawrence Scheinman
13.1 Professor Lawrence Scheinman
14 Friends of the Earth Australia
15 Mr Bruce Jacobssen
16 Mr Tom Bond
17 Toro Energy Limited
18 South Australian Chamber of Mines and Energy
19 The Chamber of Minerals and Energy of Western Australia
20 BHP Billiton
21 Rio Tinto Services Limited
22 Australian Safeguards and Non-Proliferation Office
22.1 Australian Safeguards and Non-Proliferation Office
23 Mr Ernst Willheim
23.1 Mr Ernst Willheim

B

Appendix B–Witnesses

Monday, 9 February—Canberra

Minerals Council of Australia

Dr Vanessa Guthrie, Board Member

Mr Daniel Zavattiero, Executive Director – Uranium

Individuals

Mr John Carlson,

Mr Ronald Walker

Thursday, 12 February—Canberra

Australian Radiation Protection and Nuclear Safety Agency

Dr Carl-Magnus Larsson, Chief Executive Officer

Mr David Tredinnick, Director, Government and External Relations, Office of the CEO

Australian Safeguards and Non-Proliferation Office

Mr Malcolm Coxhead, Director, CTBT and Disarmament Section, Australian Safeguards and Non-Proliferation Office

Dr Craig Everton, Director, IAEA Safeguards Section, Australian Safeguards and Non-Proliferation Office

Dr Robert Floyd, Director General, Australian Safeguards and Non-Proliferation Office

Department of Foreign Affairs and Trade

Mr Greg French, Assistant Secretary, International Legal Branch, Legal Division

Mr David Mason, Executive Director, Treaty Secretariat

Department of Industry and Science

Mr Michael Sheldrick, General Manager, Uranium and R&E International Branch, Resources Division

Monday, 18 May—Melbourne

Australian Conservation Foundation

Mr Dave Sweeney, Nuclear-Free Campaigner

Friends of the Earth, Australia

Dr Jim Green, National Nuclear Campaigner

International Campaign to Abolish Nuclear Weapons Australia

Associate Professor Tilman Ruff, Committee Member

Uniting Church in Australia, Synod of Victoria and Tasmania

Dr Mark Zirnsak, Director, Justice and International Mission Unit

Monday, 15 June—Canberra

Australian Radiation Protection and Nuclear Safety Agency

Professor Peter Johnston, Chief Medical Radiation Scientist, Medical Radiation Services Branch

Australian Safeguards and Non-Proliferation Office

Mr Malcolm Coxhead, Director, CTBT and Disarmament Section, Australian Safeguards and Non-Proliferation Office

Dr Craig Everton, Director, IAEA Safeguards Section, Australian Safeguards and Non-Proliferation Office

Dr Robert Floyd, Director General, Australian Safeguards and Non-Proliferation Office

Department of Foreign Affairs and Trade

Mr Bryce Hutchesson, Acting First Assistant Secretary, South and West Asia Division

Mr David Mason, Executive Director, Treaty Secretariat

Mrs Stacey Nation, Legal Division, International Legal Branch, International Law Section

Department of Industry and Science

Mr Joshua Reakes, Manager, Uranium and R&E International Branch, Resources Division