Yes, we can . . . .

“....To meet our growing energy needs and to prevent the worst consequences of climate change, we’ll need to increase our supply of nuclear power. It’s that simple.”
Barack Obama 2010

“....nuclear energy remains a part of the President’s overall energy plan. . .”
– White House Press Secretary Jay Carney, Monday 14 March 2011
Demand for Australian uranium is driven by factors affecting countries overseas:

- **Population growth**, driving economic growth and increased consumer demand.

- **Insecurity of energy** supply, both in resources and technology, requiring the use of large-scale continuous and reliable electricity generation with a dependable fuel supply.

- **Concerns about climate change**, requiring national Governments to find energy sources which do not add to carbon emissions burdens.

These factors are driving the growth of the nuclear industry world-wide, with expansion underway in the number of nuclear reactors being built and planned.
Global Nuclear Generation Capacity

operational power plants and future nuclear power reactors (1 April 2011)

- Operational – 440 reactors
- Under construction – 61 reactors
- Planned – > 158 reactors
- Proposed – > 326 reactors

= 440 now + 545 in prospect

Notes:

a) Location of reactors that are planned, under construction, and proposed is by country, but does not necessarily show their exact geographical location in a country.


Source: Chart supplied by BHP Billiton, updated by AUA
Expansion of the nuclear energy industry world-wide means sustainable demand for Australian uranium, which in turn means:

**More mines** – Australia’s fourth mine in production in 2011 and possibly five more mines in Western Australia will be in production by the end of 2015, with expansion of existing operations likely by 2020-21

**More exports** – earnings of $≈ \$1\ billion a year likely to grow to $≤ \$3\ billion by 2016 (ABARES)

**More jobs** – current employment (mining, exploration, supervision and regional flow-on) of approximately 3500 FTE positions could double by early 2020s

**More carbon offsets** – Australia’s uranium exports are the country’s largest single contribution to global carbon mitigation, offsetting approximately 400 million tons of fossil-fuel derived carbon dioxide
URANIUM PROPERTIES AND USES
Uranium is an abundant heavy metal with large energy potential. Uranium is *weakly radioactive*. It is distributed through the earth’s crust and found in rocks, soils, stream sediments, rivers and oceans. Traces of uranium are found in food and in the human body.

Uranium decays over geological time and contributes to what is called natural background radiation. People everywhere live with varying levels of *background radiation* every day and suffer no harm.

Uranium is used to generate electricity and to make radioisotopes for industry, research and medicine, including diagnostic tests and cancer therapy.

A small amount of uranium is used in Australia’s research reactor at Lucas Heights in Sydney to conduct highly advanced scientific research and produce medical isotopes for *cancer treatment* and for medical diagnosis.

Australian uranium oxide concentrate (UOC) undergoes further processing overseas before it is delivered to electricity utilities as fuel for *nuclear reactors*.

In a reactor, the uranium sustains a fission reaction which produces large amounts of energy, especially heat. This heat can be used to produce steam and drive a turbine to generate *electricity*. The heat can also be used for industrial processes, such as to desalinate sea water or to produce hydrogen.
When it decays, uranium produces a number of variably radioactive decay products or progeny, which are separated out during the processing of uranium ore and a mildly radioactive uranium oxide concentrate, UOC or U₃O₈, is produced.

The concentrate, sometimes known as yellowcake, has the consistency of fine sand and is physically and chemically stable. Depending on the final drying method, UOC ranges in color from dark yellow to dark green, brown or black.

The concentrate contains more than 99 per cent uranium ²³⁸ and about 0.7 per cent uranium ²³⁵, which is a fissile isotope and can sustain a nuclear reaction.

For use in a nuclear reactor, the uranium ²³⁵ must be concentrated or ‘enriched’ to between three and four per cent.

At this level of enrichment, uranium cannot be used in a nuclear weapon, which requires enrichment to at least 80 per cent U²³⁵.
QUICK FACTS – Uranium properties and uses

- Uranium is found throughout the earth’s crust in rocks, soils, stream and river sediments and in the ocean.
- Uranium decays over geological time and contributes to natural background radiation.
- Uranium, when used in a nuclear power station, delivers approximately 50,000 times as much heat energy as the equivalent quantity of brown coal, which is the main source of fuel for power stations in Victoria (500,000 megajoules per kilogram of uranium vs 10 megajoules per kilogram of lignite, or brown coal).
- When processed from ore, the useful product is called uranium oxide (\(\text{U}_3\text{O}_8\)) or uranium oxide concentrate (UOC).
- UOC contains about 99% uranium 238 and 0.7% uranium 235, which is the form of uranium that can be ‘split’ in a nuclear reaction.
- Uranium is weakly radioactive. A person standing 1 metre from a drum of UOC for one hour will receive less radiation than someone undergoing an x-ray of their arm.
- UOC is sometimes called yellowcake, though it can be dark green or brown or black. UOC has the consistency of fine sand. It is physically and chemically stable and is not soluble in water.
- UOC is an industrial chemical and must be handled carefully. It can be toxic if swallowed and UOC dust may be harmful if inhaled. Workers need to wear overalls, gloves and a mask or respirator.
- Before it can be used in a reactor, UOC has to be ‘enriched’ so that the proportion of uranium 235 is increased to between 3% and 5%. After enrichment it has to be further processed to make fuel pellets that are fabricated into fuel rods.
- To be used in a nuclear weapon, uranium has to be enriched to at least 80% uranium 235.
- Uranium is used in nuclear reactors to generate heat and create steam that drives turbines and electricity generators.
- Nuclear reactors produce no carbon dioxide. While other parts of the nuclear fuel cycle produce carbon, uranium-fuelled nuclear energy produces about the same amount of carbon across its life cycle as wind energy, and significantly less than solar power and all forms of fossil-fuelled electricity.
- Uranium is also used in scientific and research reactors to create radioisotopes that are used to treat cancer.
- Uranium that is not capable of generating a nuclear reaction (called depleted uranium) is very heavy and is used as ballast in yachts’ keels and as balancing weights in aircraft wings.
ECONOMIC PROFILE
Australia's uranium earns significant export income, at about the same level as aircraft and aviation component exports; dairy exports, like cheese; telecommunications equipment, and computer exports.

The industry provides significant employment in remote areas of Australia where little other significant economic activity occurs.

The uranium industry generates considerable revenue for State and Federal Governments and is valuable to Australia both as an export earner and as a contributor to global climate relief.

When used to fuel nuclear power stations overseas, Australian uranium helps avoid between 300 million and 400 million tonnes of greenhouse gases that would otherwise be emitted by fossil-fuelled power stations.

If the Australian uranium industry were allowed to expand to its full potential, Australia’s uranium exports could increase from around 10,000 tonnes (in 2008-09, valued at just over $A 1 billion) to more than 17,000 tonnes in 2015-16 and to between 28,500 tonnes a year and 37,000 tonnes a year in 2030 - (Deloitte modelling). Potentially, our uranium exports could offset 800 million tonnes of greenhouse gas emissions a year.
Australia has three operating uranium mines – BHP Billiton’s Olympic Dam operation in South Australia; ERA Ltd.’s Ranger mine in the Northern Territory and Heathgate Resources’ Beverley mine in South Australia. These mines are operating at or close to capacity. The Ranger mine has been forced to suspend production during the early parts of 2011 due to excessive rainfall.

A fourth mine, Honeymoon, in SA, is in final commissioning.

As many as five new mines are in prospect in Western Australia. Three of these projects are hoping to attract environmental approval in 2011 or early 2012 and may commence production by the end of 2013.

Planned expansions at Olympic Dam and Ranger, along with the other new mines, have the potential to lift Australian uranium production to the world lead within 8 – 10 years.

In the short to medium term, Australian uranium exports are forecast to increase to 17,450 tonnes in 2015-16, earning just under $A3 billion (ABARES).
Australian uranium is sold mostly under long-term contracts with confidential pricing arrangements. About 15% of our exports are sold on the ‘spot’ market, where prices fluctuate. Having hit a peak of more than $US135 per pound in 2007, largely driven by hedge fund and speculator investment, the spot price in 2008 returned to more usual longer-term levels around $US60 per pound. In 2011, the spot price is running in the high $US50s per pound. ABARES forecasts generally increasing prices during the short to medium term and is forecasting a price of $US81 per pound in 2016. Following the Fukushima emergency, prices fell steeply for a short period before returning to longer-term trend levels.

“Strong demand for uranium, particularly after 2013, and slower growth in supply are projected to support increasing uranium prices . . . .”

- ABARES, Australian Commodities, March Quarter 2011
International agencies such as the OECD’s Nuclear Energy Agency and the United Nations’ International Atomic Energy Agency are forecasting significant expansion of nuclear electricity capacity, with upper range forecasts projecting a doubling of world nuclear capacity. These forecasts suggest demand for Australian uranium will increase dramatically and could potentially double. Uranium companies in Australia are responding by increasing their work to find uranium and to develop mines. This contrasts with an extended period from the late 1970s to around 2002 when there was virtually no uranium exploration in Australia. But in 2007-08, uranium companies spent $231.5 million exploring for uranium. This is more than twice the amount spent the previous financial year ($114.1 million). Since 2003-4 the level of expenditure has approximately doubled each year. Expenditure in 07-08 was more than twenty times the expenditure level in 03-04 ($10.5 million). So far in 2010-11, exploration spending is on track to exceed $A200 million for the full year.

### Uranium Exploration: Australia 2004/05 to 2010/11 * ($Am)

<table>
<thead>
<tr>
<th>Year</th>
<th>QLD</th>
<th>WA</th>
<th>NT</th>
<th>SA (est)</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>04 / 05</td>
<td>0.4</td>
<td>0.3</td>
<td>6.9</td>
<td>13.1</td>
<td>20.7</td>
</tr>
<tr>
<td>05 / 06</td>
<td>4.6</td>
<td>2.2</td>
<td>19.1</td>
<td>30.3</td>
<td>56.1</td>
</tr>
<tr>
<td>06 / 07</td>
<td>9.0 (est)</td>
<td>11.2 (est)</td>
<td>30.1</td>
<td>63.8</td>
<td>114.1</td>
</tr>
<tr>
<td>07 / 08</td>
<td>38.1</td>
<td>26.8 (est)</td>
<td>48.7</td>
<td>118</td>
<td>231.5</td>
</tr>
<tr>
<td>08 / 09</td>
<td>29.5 (est)</td>
<td>28.6 (est)</td>
<td>54.5</td>
<td>72.6</td>
<td>185.3</td>
</tr>
<tr>
<td>09 / 10</td>
<td>22.4 (est)</td>
<td>55.4</td>
<td>38.6</td>
<td>52.7</td>
<td>169.1</td>
</tr>
<tr>
<td>10 / 11 (1st half)</td>
<td>10.7 (est)</td>
<td>57.9</td>
<td>24.4</td>
<td>30.9</td>
<td>123.9</td>
</tr>
</tbody>
</table>

*Source: Australian Bureau of Statistics, series 8412.0. (Exploration for uranium is banned in Victoria and New South Wales and is negligible in Tasmania)
QUICK FACTS – Economic profile of the uranium industry

- Three operating mines, fourth in commissioning. Three more possible in WA by 2013
- BHP Billiton’s Olympic Dam mine in South Australia is a polymetallic mine, producing copper, gold, silver and uranium and is the biggest uranium mine in the world.
- The uranium industry provides approximately 3500 full time equivalent jobs (mining, exploration, supervision and regional flow-on)
- Uranium is a billion dollar export industry – for the first time, the value of uranium exports exceeded $A1 billion in 2008 – 2009
- Uranium exports are comparable in scale to exports of aircraft and aviation components and telecommunications equipment
- Production is forecast to increase at an average 15 per cent per annum to 17,450 tonnes U₃O₈ in 2015-16 (ABARES)
- Uranium mining is permitted as a matter of bipartisan national policy but is banned in Queensland, New South Wales and Victoria
- If all mining bans were removed and the industry expanded to its full potential, uranium production and exports could add between $A14.2 billion and $A17.4 billion in net present value terms to Australian GDP between now and 2030 (Deloitte modelling)
- Average uranium price forecast to be $US81 /lb U₃O₈ in 2016 (ABARES)
- U₃O₈ exports offset between 300 million and 400 million tonnes of carbon dioxide a year, making uranium exports arguably the biggest single contribution Australia makes to global climate change mitigation
- Exploration expenditure ≈ $A200 m a year ($A231.5m 2007-08; $A123.9m, first half 2010-11)
- Spending on exploration in 2007-08 was more than twenty times greater than in 2003 -04 ($A10.5 m)
- Uranium may be exported only from the Ports of Adelaide and Darwin
- A Government / industry body called the Uranium Council examines ways to remove obstacles to the growth of the uranium sector
- Australia has a significant opportunity to expand the uranium industry, as we have more than 40% of the world’s uranium recoverable at reasonable cost, yet we supply less than one fifth of the world market
RESOURCES AND PRODUCTION
Australia has by far the world’s largest endowment of uranium. Australia has 43 per cent of the world’s uranium resource recoverable at a cost of less than $US80 per kilogram, and 31 per cent of the world’s uranium recoverable at less than $US130 per kilogram.

<table>
<thead>
<tr>
<th>Country</th>
<th>Resources (Tonnes U) recoverable @ &lt;USD80 / kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>1 612 000</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>475 500</td>
</tr>
<tr>
<td>Canada</td>
<td>447 400</td>
</tr>
<tr>
<td>Namibia</td>
<td>116 400</td>
</tr>
</tbody>
</table>

But despite the dominant scale of its uranium resource, Australia supplies less than one fifth (approximately 17 per cent) of the annual world requirement for mined uranium.

*Data on this page mostly from OECD/NEA, IAEA: Uranium 2009: Resources, Production and Demand, Paris, Vienna 2010*
Australia is generally considered to be performing below its potential uranium production capacity as indicated by the ratio of its resource size to its annual production. (see table below) Commencement of new mines and expansion of existing mines should improve this ratio during the next five to eight years.

<table>
<thead>
<tr>
<th>Country</th>
<th>Production (tonnes UOC)</th>
<th>Ranking</th>
<th>Production / resource ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan</td>
<td>&gt; 16,000</td>
<td>1 (3)</td>
<td>1.1</td>
</tr>
<tr>
<td>Canada</td>
<td>≈ 12,000</td>
<td>2 (1)</td>
<td>2.0</td>
</tr>
<tr>
<td>Australia</td>
<td>≤ 10,000</td>
<td>3 (2)</td>
<td>0.5</td>
</tr>
<tr>
<td>Namibia</td>
<td>&gt; 5,000</td>
<td>4</td>
<td>2.7</td>
</tr>
<tr>
<td>Russia</td>
<td>≈ 4,000</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>&gt; 3,500</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Australia has three uranium mines (Olympic Dam SA, Ranger NT and Beverley SA). Ranger and Olympic Dam both have sizeable expansions planned. A fourth mine (Honeymoon SA) is commencing in 2011 and a fifth facility (Four Mile SA) is expected to follow. In WA, where State law was changed in 2008 to permit uranium mining, five projects are being actively pursued and three of them are hoped to be in production by 2013. Queensland, Victoria and New South Wales prohibit uranium mining.

Considerable potential exists for further uranium discoveries. Exploration activity was negligible between 1983-2005, but annual exploration expenditure is now of the order of $A200m p.a.
The Australian Bureau of Agricultural and Resource Economics and Sciences projects increasing world demand for Australian uranium, driving increased prices, export volumes and realised export values. “Over the medium term,” says ABARES, “uranium prices are projected to increase as demand growth outpaces supply. World consumption is projected to increase rapidly, underpinned by expansions to nuclear generating capacity.” For example, ABARES says, uranium consumption in China is expected to grow at an annual rate of 44 per cent. “Nuclear power generation is being encouraged because it can provide large quantities of baseload electricity generation capacity with lower greenhouse gas emissions than other fuel sources”. While a significant proportion of world uranium demand is currently met from secondary supplies of ‘down-blended’ former nuclear weapons-grade material, the USA – Russia program under which this supply is created will soon come to an end. “The decline in secondary supplies and a significant increase in nuclear generating capacity are likely to cause uranium prices to increase significantly after 2013”. (ABARES, Australian Commodities, Vol 18 no.1 March quarter 2011)

### OUTLOOK (ABARES)

<table>
<thead>
<tr>
<th>Year</th>
<th>U₃O₈ production (tonnes)</th>
<th>Export value (nominal) ($A)</th>
<th>Export value (real) ($A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>8,682</td>
<td>960 m</td>
<td>960 m</td>
</tr>
<tr>
<td>2011-12</td>
<td>9,575</td>
<td>1,143 m</td>
<td>1,109 m</td>
</tr>
<tr>
<td>2012-13</td>
<td>10,050</td>
<td>1,244 m</td>
<td>1,175 m</td>
</tr>
<tr>
<td>2013-14</td>
<td>11,460</td>
<td>1,689 m</td>
<td>1,556 m</td>
</tr>
<tr>
<td>2014-15</td>
<td>16,025</td>
<td>2,955 m</td>
<td>2,657 m</td>
</tr>
<tr>
<td>2015-16</td>
<td>17,450</td>
<td>3,355 m</td>
<td>2,942 m</td>
</tr>
</tbody>
</table>
QUICK FACTS – Uranium resources and production

- Australia has by far the world’s largest endowment of uranium. Australia has 43 per cent of the world’s uranium resource recoverable at a cost of less than $US80 per kilogram, and 31 per cent of the world’s uranium recoverable at less than $US130 per kilogram.

- The largest proportion of the resource is in South Australia, followed by the Northern Territory, Western Australia, Queensland and New South Wales. The scale of the resource in Queensland and New South Wales is not precisely known. It is not known how much uranium is in Victoria or Tasmania.

- Despite its large uranium endowment, Australia supplies less than one fifth (approximately 17 per cent) of world demand for uranium each year.

- Australia has three operating mines (Olympic Dam, SA; Ranger, NT; Beverley, SA) and a fourth (Honeymoon, SA) currently being commissioned.

- Five uranium mines are being developed in Western Australia. Three of these projects will be subject to formal environmental assessment in 2011, with the possibility of production commencing in 2013.

- Due to production difficulties, Australian uranium production was significantly reduced in 2009-10 to 7,156 tonnes (2008-09, 10,311 tonnes)

- In 2010-11, production is forecast to improve to 8,682 tonnes and to pass the 10,000 tonne mark again in 2013-14 (10,050 tonnes)

- After new mines come into production in South Australia, Western Australia and the Northern Territory (expected 2014-15), production is expected to jump to more than 16,000 tonnes and to 17,450 tonnes in 2015-16.

- Export revenues in 2015-16 are forecast to be nearly $A3 billion ($A2,942 m)

- Australian uranium producers export Uranium Oxide Concentrate under long-term contract to electricity utilities in countries which have signed the Nuclear Non-Proliferation Treaty (NPT) and with which Australia has a bilateral nuclear safeguards agreement with additional provisions for facilities inspection.

- Australia has 22 bilateral safeguards agreements with NPT signatories, including an agreement with Euratom covering all EU member States. The agreements cover 39 countries, but Australia currently exports uranium to 13 countries.

- Australian uranium is exported only for peaceful purposes and the Australian Safeguards and Non-proliferation Office (ASNO) certifies this to be the case in its Annual Reports to Parliament. http://www.dfat.gov.au/asno/annual_reports.html
ENVIRONMENT MATTERS
Mining uranium requires management of environmental issues similar to those involved with all forms of mining – dust, chemicals, water, waste, chemicals, land rehabilitation, and so on.

During 50 years of mining, the uranium industry has accumulated a great deal of experience in best environmental practice and has continually learned and built on that experience.

Uranium mine operators follow leading practice as detailed in a number of Government and mining industry guidelines, standards and handbooks.

The uranium industry also has a Code of Practice and a set of Stewardship Principles which further encourage the adoption of leading practice in all aspects of mine management.

As with any mining operation where radiation is present, strict regulations limit radiation exposure, and operators take comprehensive measures to reduce radiation exposure, such as ventilation to prevent any build up of radon gas, dust suppression, use of dust masks during drilling and use of protective clothing.

Like most forms of mining and ore processing, underground and open-cut uranium mining result in waste rock and tailings, which are stored in carefully-designed and purpose-engineered facilities on the mine site. Uranium producers provide financially up-front for the closure and rehabilitation of their mine sites at the end of their lives.

The resources sector has worked closely with Government to develop standards and guidelines for the closure and rehabilitation of mine sites and uranium companies work to the same standards and guidelines as all mine operators.

**In August 2008, the Federal Minister for the Environment, Heritage and the Arts, Peter Garrett, approved expansion of the Beverley mine, announcing that he had received advice from the CSIRO, Geoscience Australia and the Chief Scientist that Heathgate Resources’ management of its solution mining techniques at Beverley in South Australia represented world’s best practice.**
People are rightly concerned about water usage in industry.

The mining industry, including the uranium industry, is as concerned as anybody else about that and, as in all areas of its operations, mining seeks to continuously improve its performance. Mine operators seek to keep water consumption to the minimum required to operate the facility.

Water use by uranium mining is unremarkable compared with mining in general – it uses more than some other types of mining, and less than others. The latest ABS National Water Account report found that the mining industry used water more productively in 2008-09 compared with 2004-05, when assessed by the value added per Gigalitre of water consumed ($226m / GL in 2008-09 compared with $97m / GL in 2004-05).

The Australian Bureau of Statistics produces official data on water use. Data on water consumption in Australia in 2008 - 09, the latest available, are shown in the following table. The ABS notes that 2008-09 was a relatively ‘wet’ year and overall water consumption by agriculture was much lower proportionately than in 2004-05 (65% of total). In some States, the relative proportions of total consumption vary. For example, in Western Australia, where mining is a larger contributor to the State economy than it is in relative terms nationally, water consumption by mining is about 18 per cent of the total.

<table>
<thead>
<tr>
<th>% of total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>49.6</td>
</tr>
<tr>
<td>Forestry and fishing</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Mining</strong></td>
<td><strong>3.6</strong> *</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>4.8</td>
</tr>
<tr>
<td>Electricity and gas supply</td>
<td>2.3</td>
</tr>
<tr>
<td>Water supply</td>
<td>17</td>
</tr>
<tr>
<td>Other</td>
<td>9.4</td>
</tr>
<tr>
<td>Household</td>
<td>12.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100 (rounded)</strong></td>
</tr>
</tbody>
</table>

* With just three operating mines and a fourth in commissioning, uranium mining makes up a tiny proportion of the total water used by mining.

Source: ABS, Water Account 2008-09, 4610.0
INTERNATIONAL MATTERS
Australian uranium producers sell uranium direct to electricity utilities in countries which have signed the Nuclear Non-proliferation Treaty (NPT) and with which the Australian Government has signed a bilateral nuclear cooperation and safeguards agreement, with an Additional Protocol permitting extended inspection and monitoring of facilities. Australia has agreements with 21 countries and one with Euratom, the agency covering all 27 EU member states. (Current destinations of Australian uranium are listed in the table below). Permits to export uranium are issued by the Department of Resources, Energy and Tourism. Compliance with Australian bilateral safeguards agreements is monitored and verified by the Australian Safeguards and Non-proliferation Office within the Department of Foreign Affairs and Trade. ASNO has consistently reported that no Australian uranium has been used for non-peaceful purposes.

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries</th>
<th>Share %</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>United States, Canada</td>
<td>35.5</td>
</tr>
<tr>
<td>Europe</td>
<td>France, U.K., Sweden, Finland, other EU</td>
<td>32.9</td>
</tr>
<tr>
<td>Asia</td>
<td>Japan, China, S. Korea, Taiwan (under bilateral with USA)</td>
<td>31.6</td>
</tr>
<tr>
<td></td>
<td>* Australia and Russian Federation ratified a bilateral supply agreement November 2010</td>
<td>100.0</td>
</tr>
</tbody>
</table>

While the Australian Government permits uranium exports under a bilateral safeguards framework which has bipartisan support, only two ports are permitted to be used to ship UOC overseas – the Ports of Adelaide and Darwin. The Australian Uranium Association supports a relaxation of these restrictions and argues that the real physical properties of uranium should guide decisions on the ports used.
QUICK FACTS – International matters

- Australian uranium producers export Uranium Oxide Concentrate under long-term contract to electricity utilities in countries which have signed the Nuclear Non-Proliferation Treaty (NPT).

- Customer countries must enter a bilateral safeguards agreement with Australia.

- Customer countries must also agree to an Additional Protocol providing for more rigorous inspection and monitoring of their facilities.

- Australia has 22 bilateral safeguards agreements with NPT signatories, including an agreement with Euratom covering all 27 EU member States. The agreements cover 39 countries, but Australia currently exports uranium to 13 countries.

- Australian uranium is exported only for peaceful purposes and the Australian Safeguards and Non-proliferation Office (ASNO) certifies this to be the case in its Annual Reports to Parliament. [http://www.dfat.gov.au/asno/annual_reports.html](http://www.dfat.gov.au/asno/annual_reports.html)

- A significant number of Australia-based uranium companies are active in overseas countries, especially in Africa (Namibia, Tanzania, Malawi, Burkina Faso, Niger).

- Australian companies in Africa are involved in uranium exploration, resource definition and project development and two operating mines (Paladin Energy, Langer Heinrich mine – Namibia and Kayelekera mine, Malawi).

- Australian-based companies also have uranium interests in countries including Argentina, Italy, Canada and the USA.

- Companies that are Members of the Australian Uranium Association are bound to apply the AUA Code of Practice, wherever in the world they have operations.

- The Government of India has informed the Australian Government that it wishes to import Australian uranium for use as fuel in civil nuclear reactors, but the Australian Government has rejected this request on the grounds that India is not a signatory to the Nuclear non-Proliferation Treaty.

- The Australian Government has begun preliminary discussions with the Government of the United Arab Emirates with a view to the development and signature of a bilateral nuclear cooperation agreement which would permit the supply of Australian uranium to the UAE.
Uranium mining is a prescribed **nuclear action** under Commonwealth law and before any uranium mine can be developed in Australia, it must be assessed and approved by the Federal and State or Territory governments. Usually, this is done under a **bi-lateral agreement** between the Commonwealth and the States/Territories.

Generally, the assessments are made on the basis of **scientific data** about various aspects of a mining proposal and recommendations are made by public servants on the **merits** or otherwise of proposed projects.

Generally, the form of assessment is an **Environmental Impact Statement (EIS)** – the most rigorous assessment available (often given different descriptions by State and Territory assessment agencies).

The EIS is put on public exhibition for an extended period to allow public consultation and assessment by government agencies (usually the departments or agencies concerned with resources, energy or mining; public health; **radiological safety**, and **environmental standards**).

The project proponent responds to issues raised during the public exhibition phase, then relevant Federal and State/Territory regulatory agencies prepare **reports and recommendations** for their respective ministers who can either reject or approve the mining proposal, or approve it with **conditions**.

A typical assessment and approval process takes at least two years from referral to ministerial approval.
The industry is highly regulated by Government at international, national and State levels. Through the AUA, the industry also applies high-standards of governance and encourages sharing of knowledge and leading practice. All Members of the Association agree to adopt and apply the Association’s Charter [http://www.aua.org.au/Content/AUACharter.aspx] and its Code of Practice. [http://www.aua.org.au/Content/BestPractice.aspx]

The Charter is a commitment by Members of the Association to operate in ways that reflect the best standards of overall corporate behaviour. The Charter gives broad commitments in the areas of sustainable development, uranium stewardship, anti-trust behaviour, regulation and resource reporting.

The Code, which explicitly applies to Members of the Association wherever in the world they conduct operations, sets standards of operational practice in areas related to the specific properties of uranium as well as standards in other areas of resource industry practice.


The purpose of the Code is to provide a basis for the continuous improvement in the operational performance of the industry with a view to revising the Code as operational practice changes.

The Code commits AUA Members to continuous improvement in their operations, the safe and secure management of hazardous materials, mine closure and rehabilitation best practices, radiation control best practices, adherence to regulatory obligations and provision of information about uranium to stakeholders.

The Association annually surveys Member performance under the Code and publishes the survey results.
The Australian uranium industry has been at the forefront of development of an international framework for stewardship of uranium. The stewardship program promotes interaction between companies and organisations at all stages of the nuclear fuel cycle.

The global nuclear power industry has begun to work cooperatively to ensure uranium and its by-products are managed in a safe, environmentally, economically and socially responsible manner.

Uranium stewardship is a program of action by the global nuclear power industry to put that commitment into practice.

A central idea of uranium stewardship is the responsibility shared by all players in every sector in the nuclear fuel cycle – from exploration and mining to spent fuel recycling and management, from the production of medical resources to the operation of nuclear power plants - to work with all other sectors to give effect to stewardship principles.

Stewardship is a continuous and developing process in which companies contribute as they can in their own businesses and in dealings with customers.

The AUA, as the Australian uranium industry’s advocacy body, takes up stewardship issues such as non-proliferation and waste management in a number of ways, including through direct representations to Government and regulatory bodies and through participation in Parliamentary reviews.

NUCLEAR FUEL CYCLE
The Australian Uranium Association is primarily the advocacy body for the Australian uranium exploration and mining industry, we are part of the international nuclear energy industry. The AUA is a supporter of nuclear energy and has adopted the following formal policy on nuclear energy:

- Nuclear power is safe, reliable, economic and clean
- Nuclear energy is an important option for countries wishing to secure long term electricity supplies in a way which does not add to particulate air pollution or carbon dioxide emissions
- The AUA supports in principle the introduction of nuclear energy in Australia
- The AUA believes the Australian Government should include nuclear energy as an option in any review of future energy needs and energy supply sources
- Australian Governments should take all actions necessary to enable the introduction of nuclear energy in future, should this prove to be in the national interest.
The emergency at the Fukushima Daiichi nuclear power plant on the northeast coast of Japan resulted from a very serious industrial accident caused by natural disasters of unprecedented power. The plant survived the extraordinary magnitude 9 earthquake which hit Japan on 11 March and for approximately one hour after the earthquake the plant’s emergency shut-down and systems worked as designed. However, the massive 15 metre tsunami caused by the earthquake overwhelmed the plant and disabled its emergency power systems, leading to overheating and core fuel damage in three of the plant’s six reactors. The Fukushima accident and its consequences continue to present many serious challenges for the operating company, TEPCO and the Government of Japan.

- The emergency affecting Fukushima is not the test of the safety of the industry world-wide
- The economic and environmental drivers encouraging countries to use nuclear energy for electricity supply remain as important today as they were before the Fukushima accident
- The emergency will require a stewardship response which will become clearer as investigations unfold, and the Australian uranium industry seeks to be a key participant in that response
- The International Atomic Energy Agency is coordinating the international response to the Fukushima accident and the Australian uranium industry supports the kinds of initiatives the IAEA is proposing
- NGO attempts to blame the Australian uranium industry for the Fukushima crisis on the basis that Australian uranium might have been in use there are just opportunism
- Giving the Fukushima accident the same international nuclear event classification as the Chernobyl accident does not make the two the same; considerable differences exist between the nature, consequences and management of the Fukushima and Chernobyl accidents
- Deposition of radionuclides as a result of the Fukushima accident varies from day to day and place to place; they are not dangerous to human health. Radiation and dose rates are low and decreasing; marine sampling shows decreasing radiation
- People may have been exposed to low levels of radiation as a result of the accident; such exposure will produce no physical symptoms; the health risks associated with any such exposure are considered to be extremely low
- Efforts by national Governments to review the safety of their nuclear facilities are prudent and sensible
- National Governments will make their own decisions on their use of nuclear energy in light of the Fukushima emergency.
- More than 430 nuclear reactors are operating safely around the world
Australian uranium and the nuclear fuel cycle

Information Pack

May 2011

For further information contact -
Simon Clarke
Communications Director
T: +61 3 8616 0440    M: +61 418 816 088
E: simon.clarke@aua.org.au    W: www.aua.org.au